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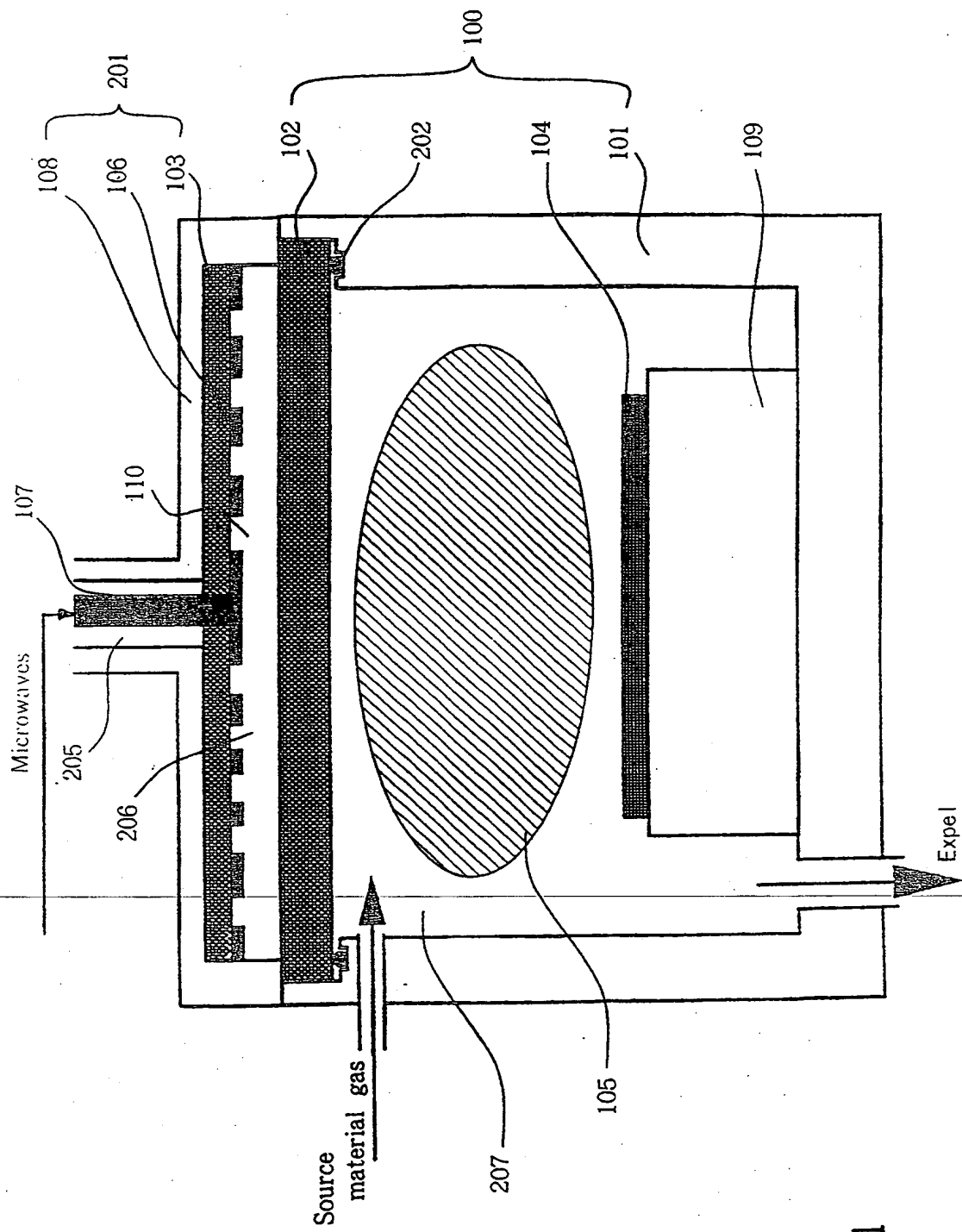


Fig. 1

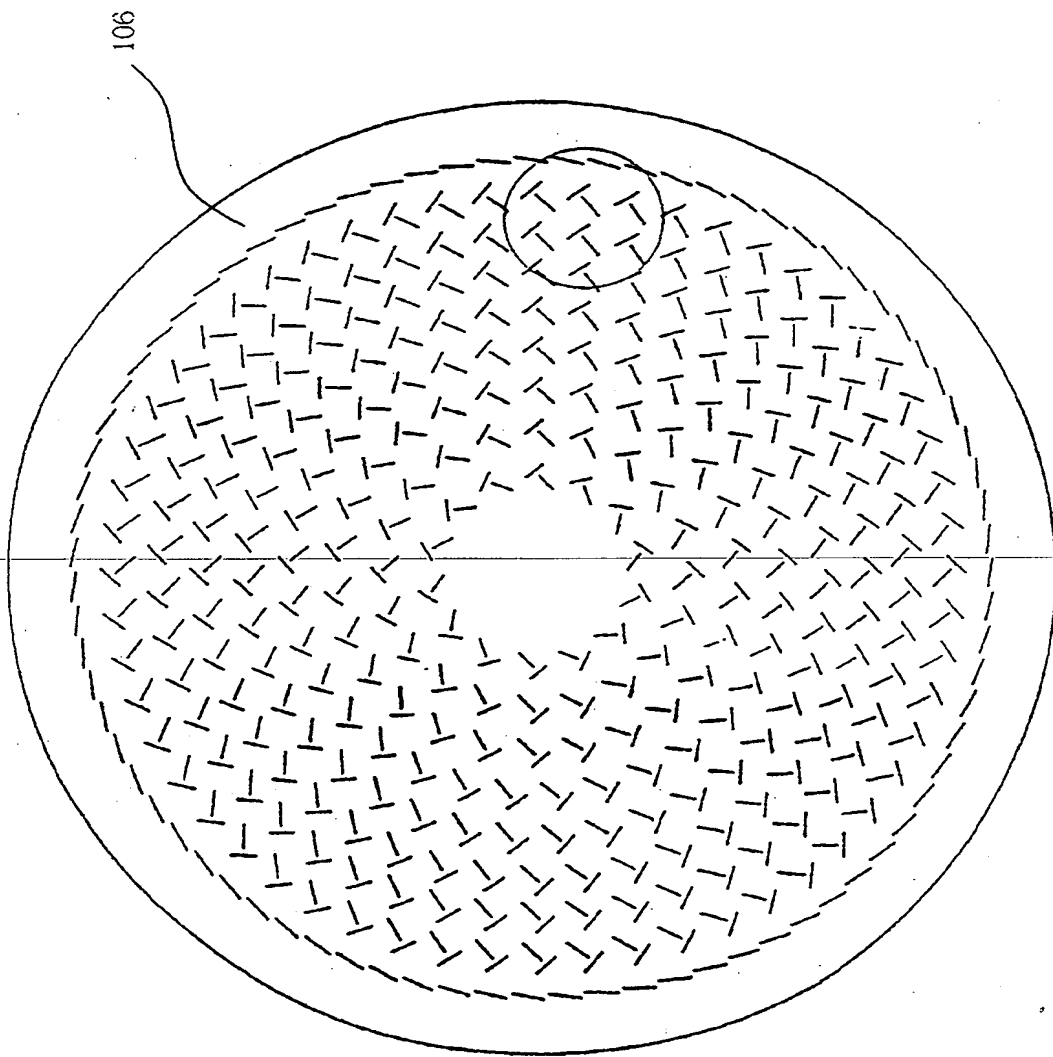


Fig. 2A

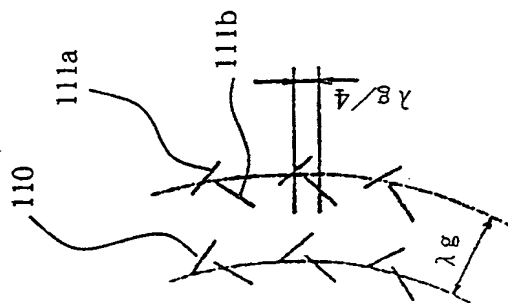


Fig. 2B

Microwave power (W) Chamber material and inner surface processing conductivity ($\Omega^{-1}\cdot m^{-1}$)	400	800	1200	1600
SUS (no inner surface processing) 1.4×10^8	x	x	x	x
Pb (inner surface processing onto SUS) 4.8×10^8	x	x	x	Δ
Ta (inner surface processing onto SUS) 8.0×10^8	x	x	O	O
W (inner surface processing onto SUS) 1.7×10^7	x	O	O	O
Al (inner surface processing onto SUS) 3.7×10^7	O	O	O	O
Au (inner surface processing onto SUS) 4.3×10^7	O	O	O	O
Cu (inner surface processing onto SUS) 6.0×10^7	O	O	O	O
Ag (inner surface processing onto SUS) 6.3×10^7	O	O	O	O

Inner surface processing thickness: $10 \mu m$

O plasma stable Δ plasma unstable x no activation of plasma caused

Fig. 3

Al thin film thickness(μm)		10.0	5.0	2.0	1.5	1.0	0.7	0.5	0.2
Plasma generation state caused by frequency of microwaves	2.45GHz	O	O	O	Δ	Δ	x	x	x
	8.3GHz	O	O	O	O	O	Δ	x	x

skin depth determined from microwave $\delta=(2/\mu O \sigma \omega)^{1/2}$
when microwave frequency is 2.45GHz(1.67 μm)

skin depth determined from microwave $\delta=(2/\mu O \sigma \omega)^{1/2}$
when microwave frequency is 8.3GHz(0.89 μm)

Fig. 4

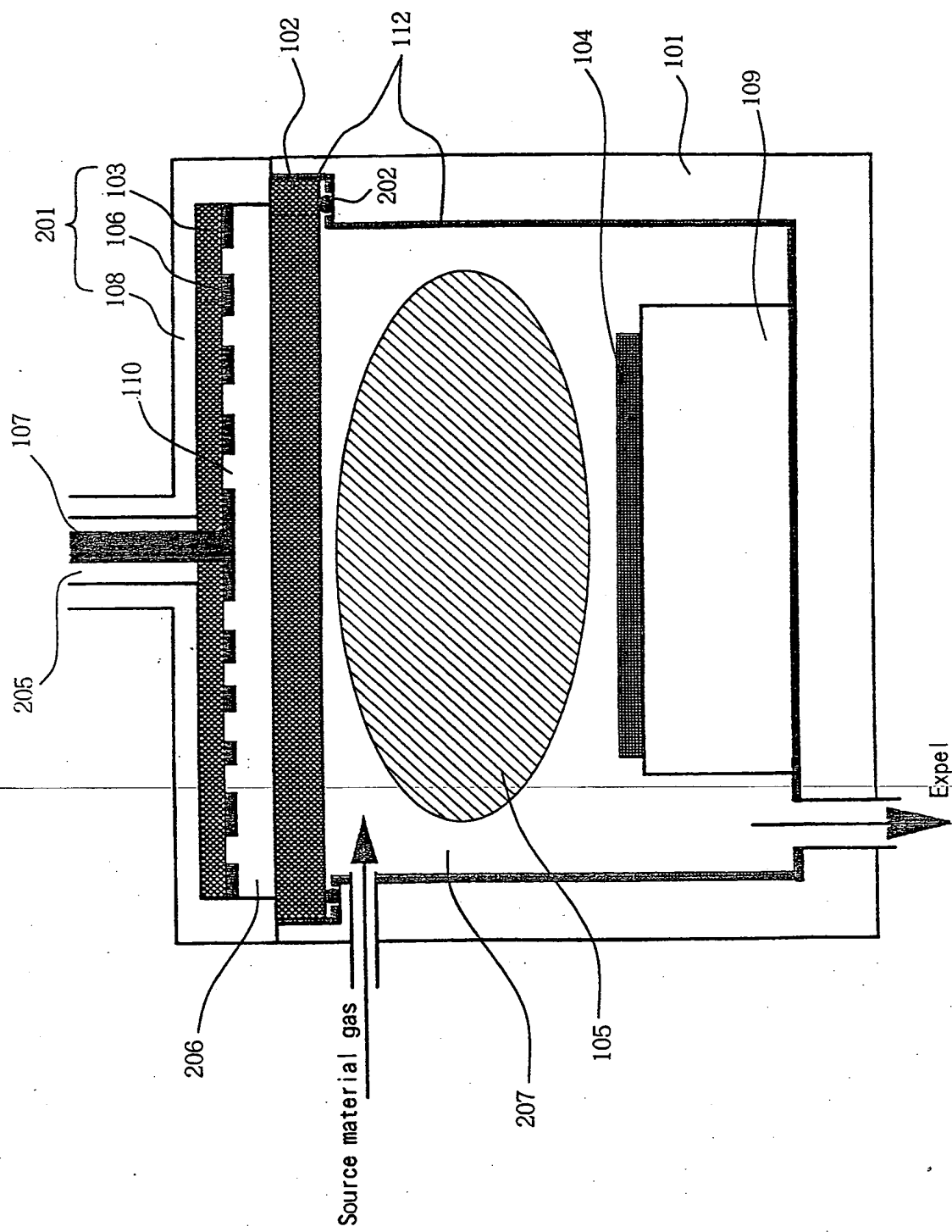


Fig. 5

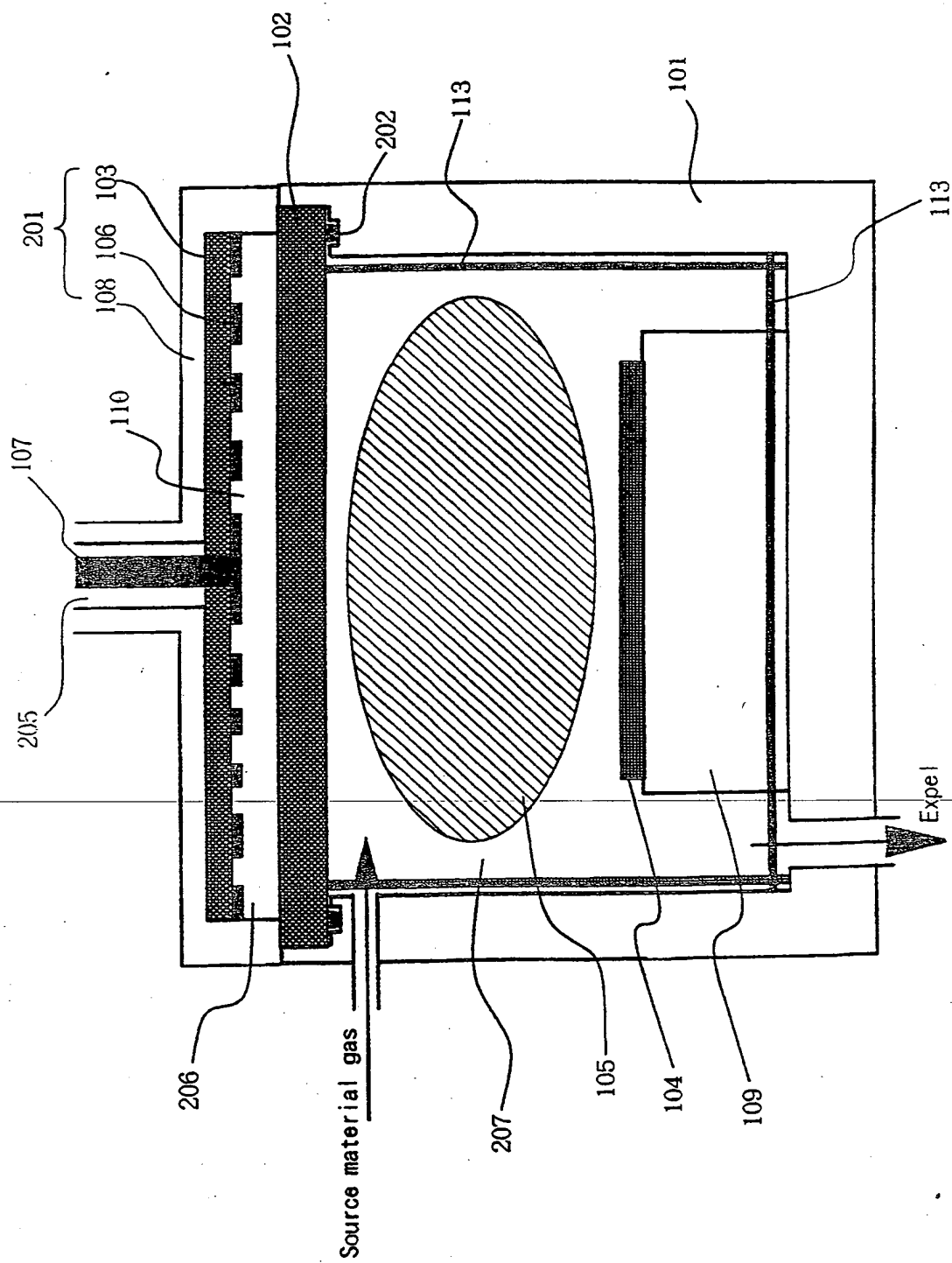


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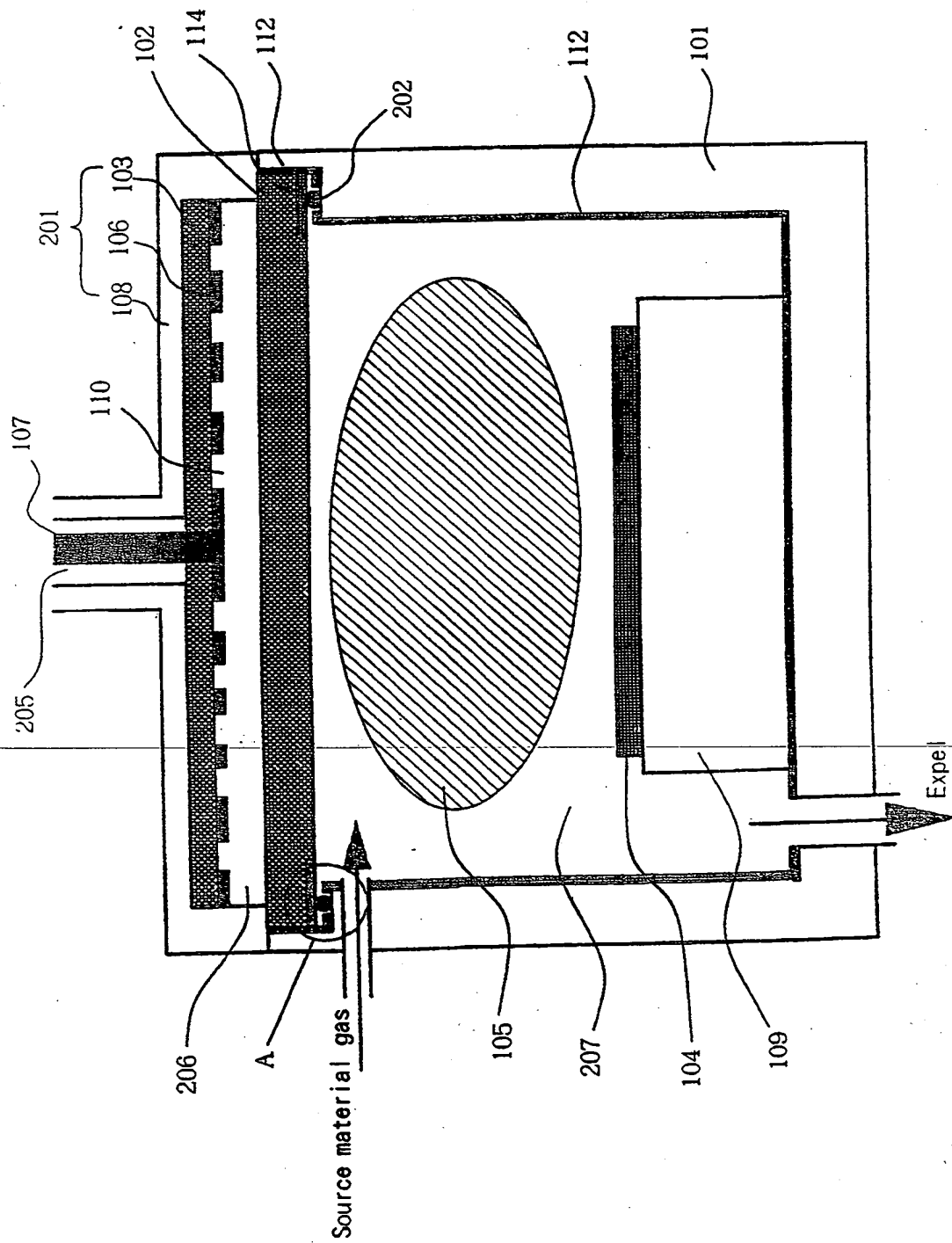


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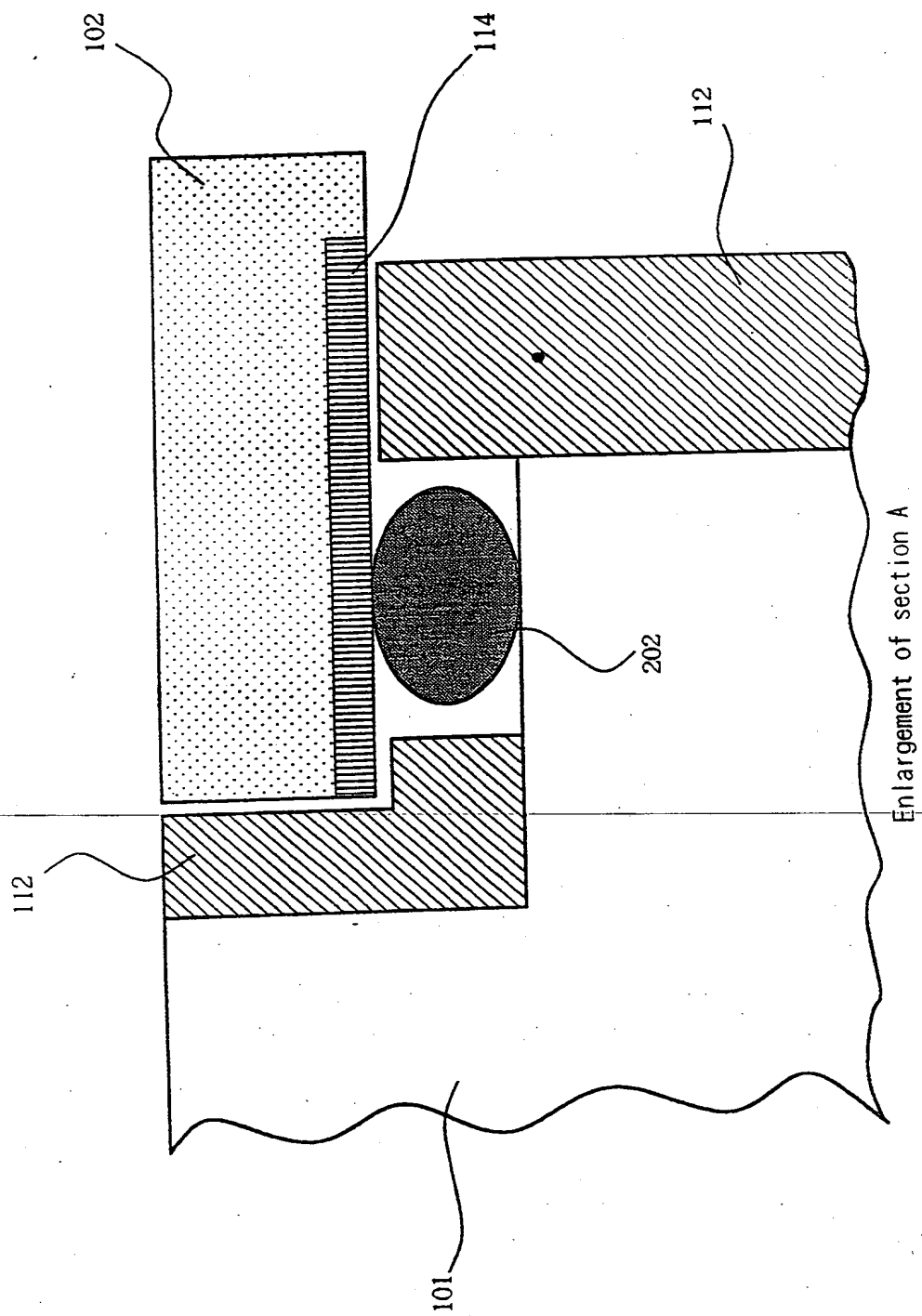


Fig. 8

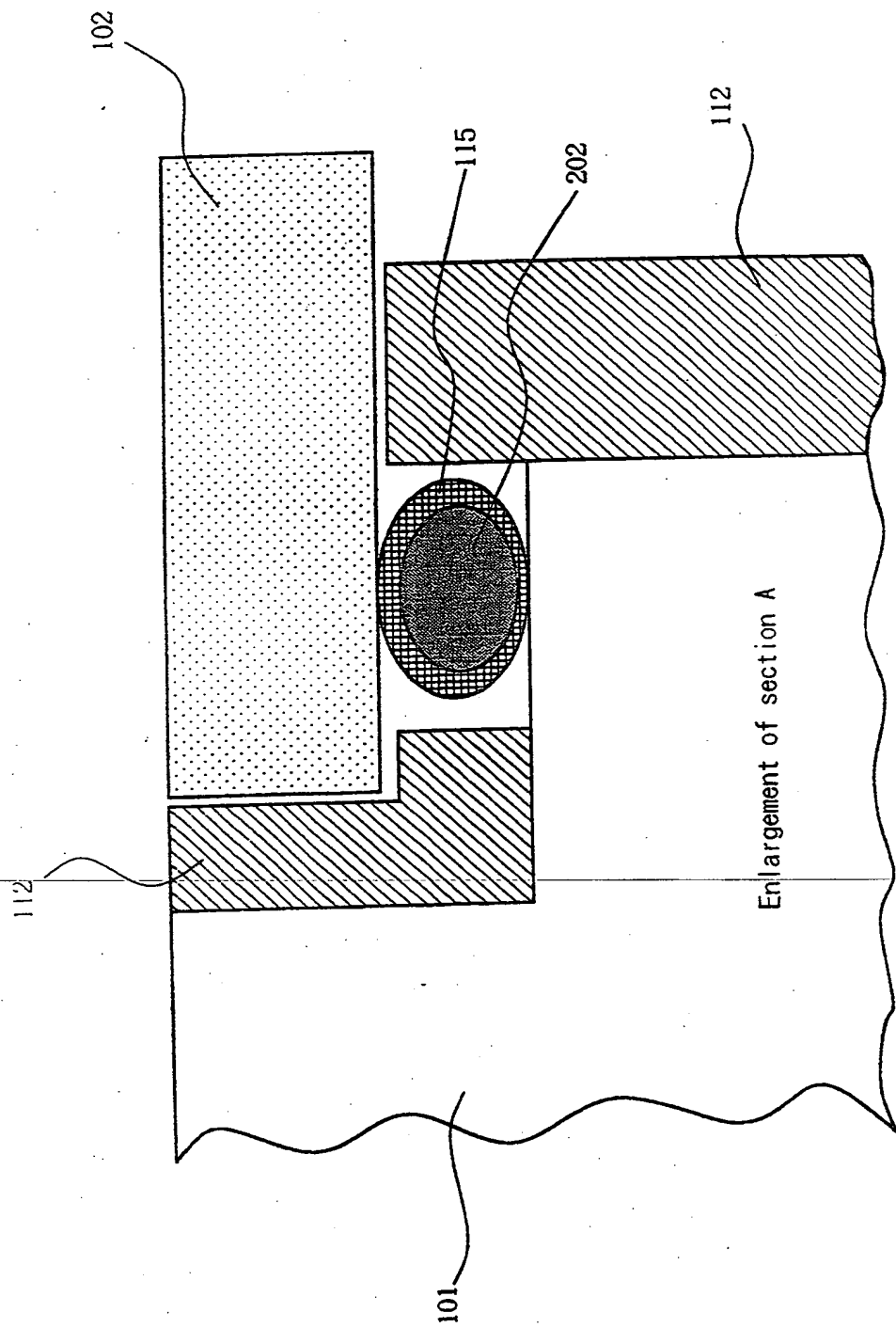


Fig. 9

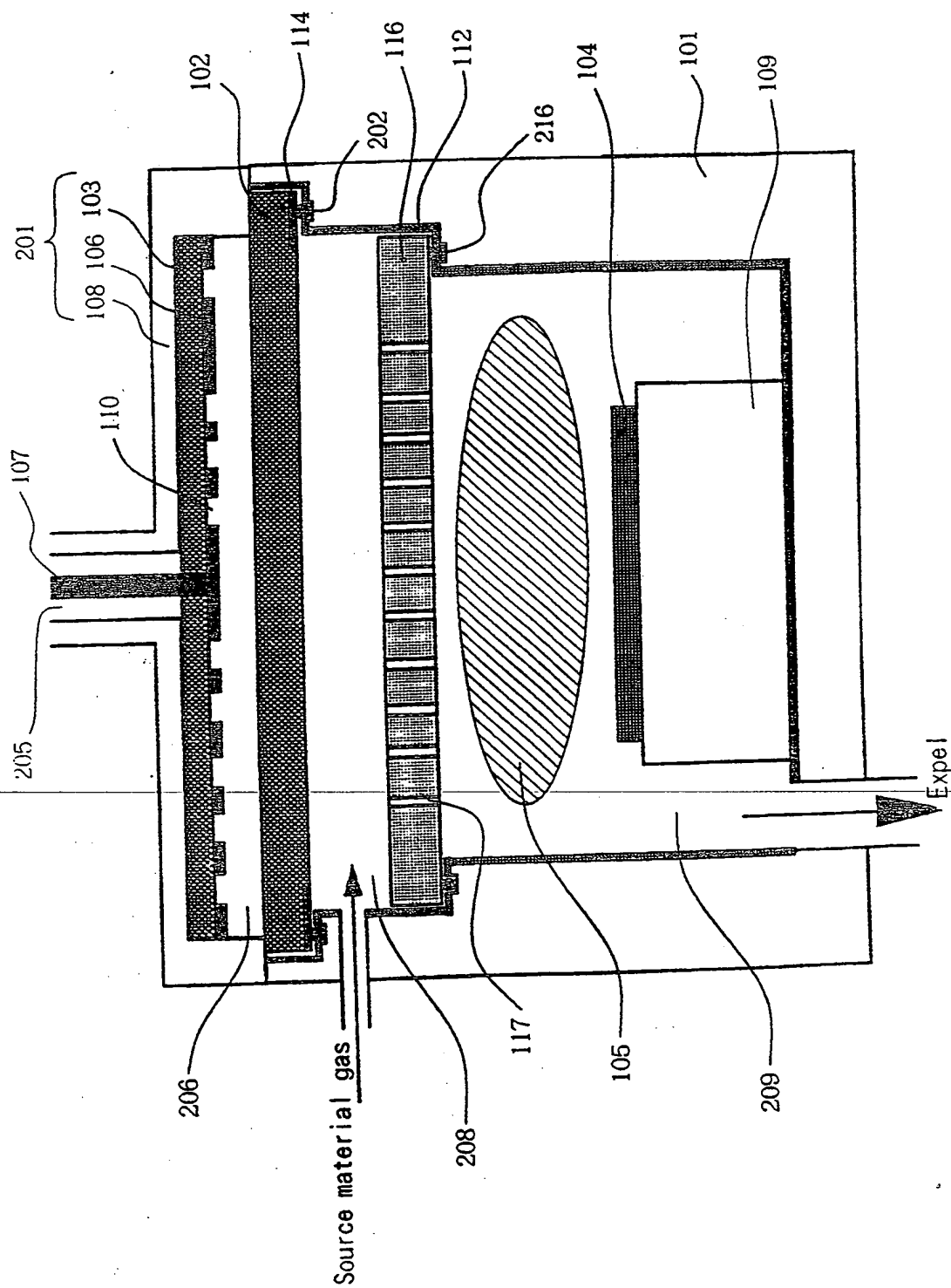


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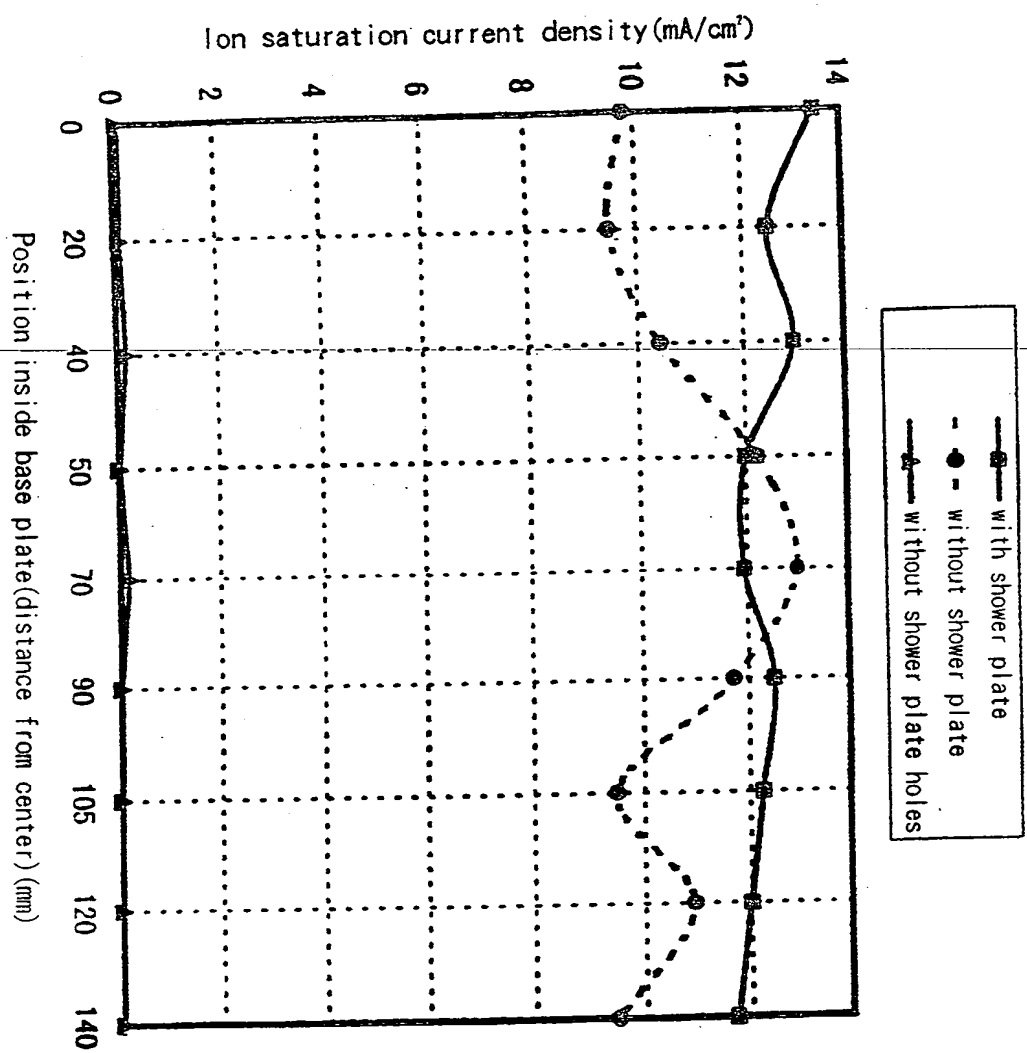


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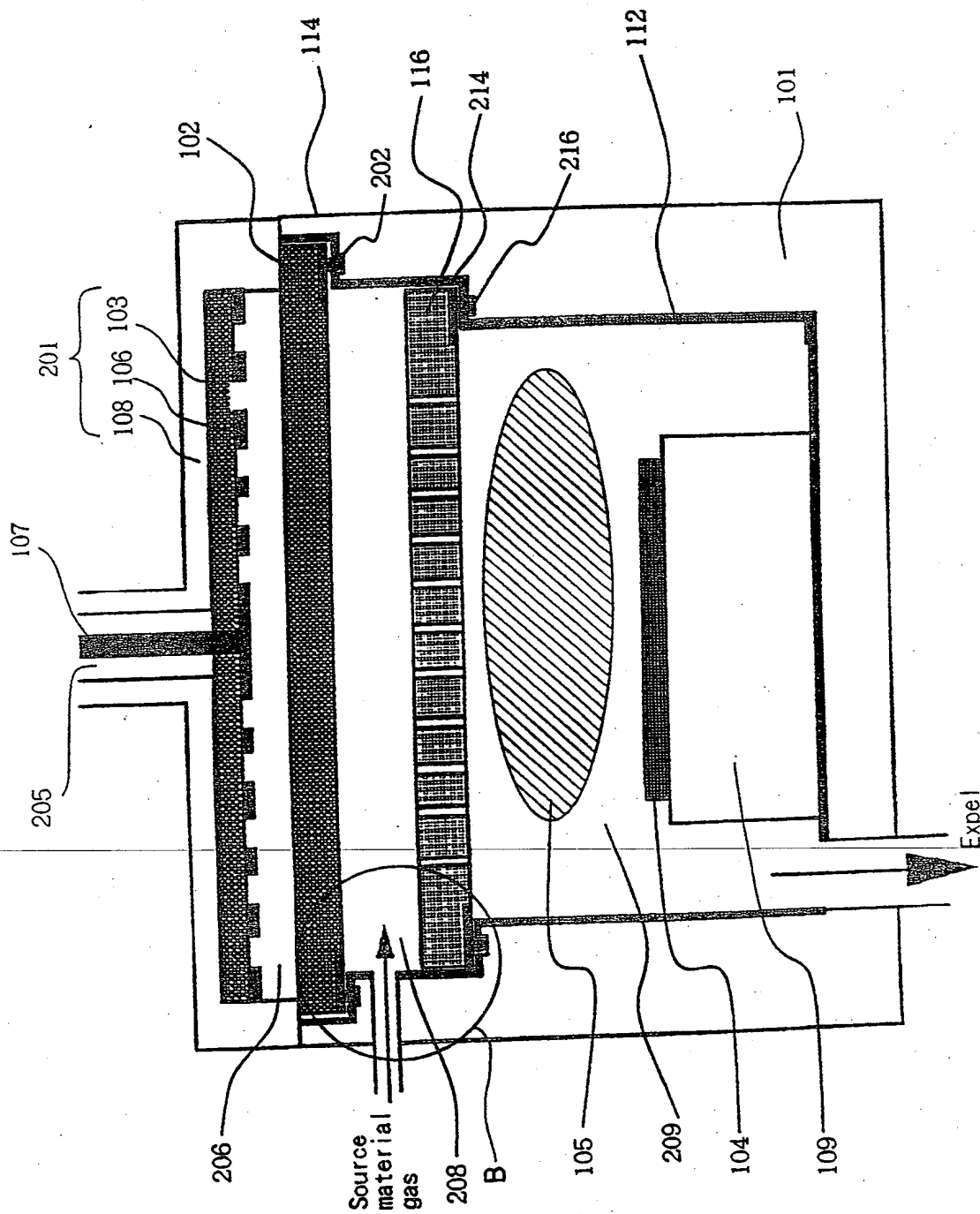


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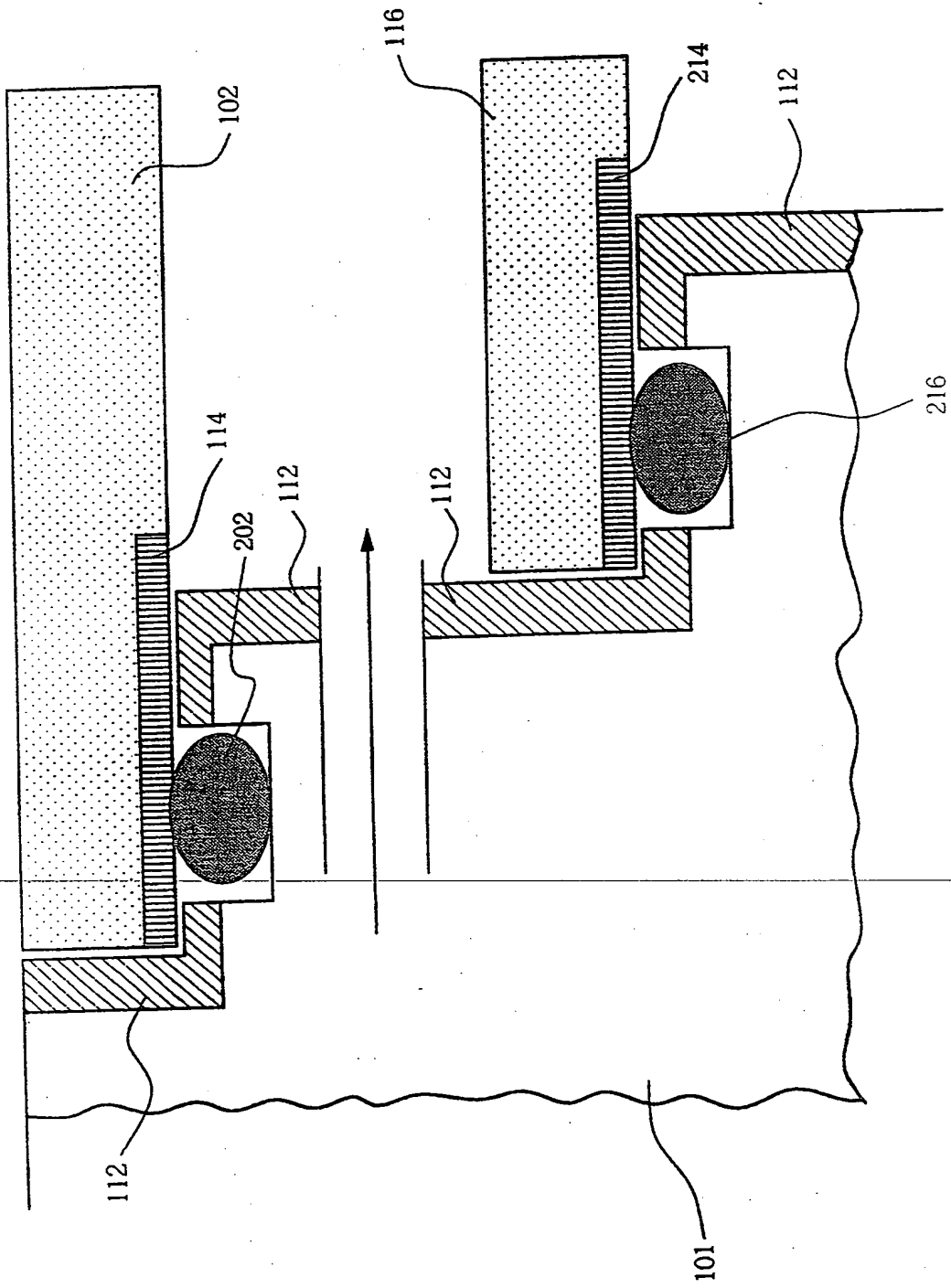


Fig. 13

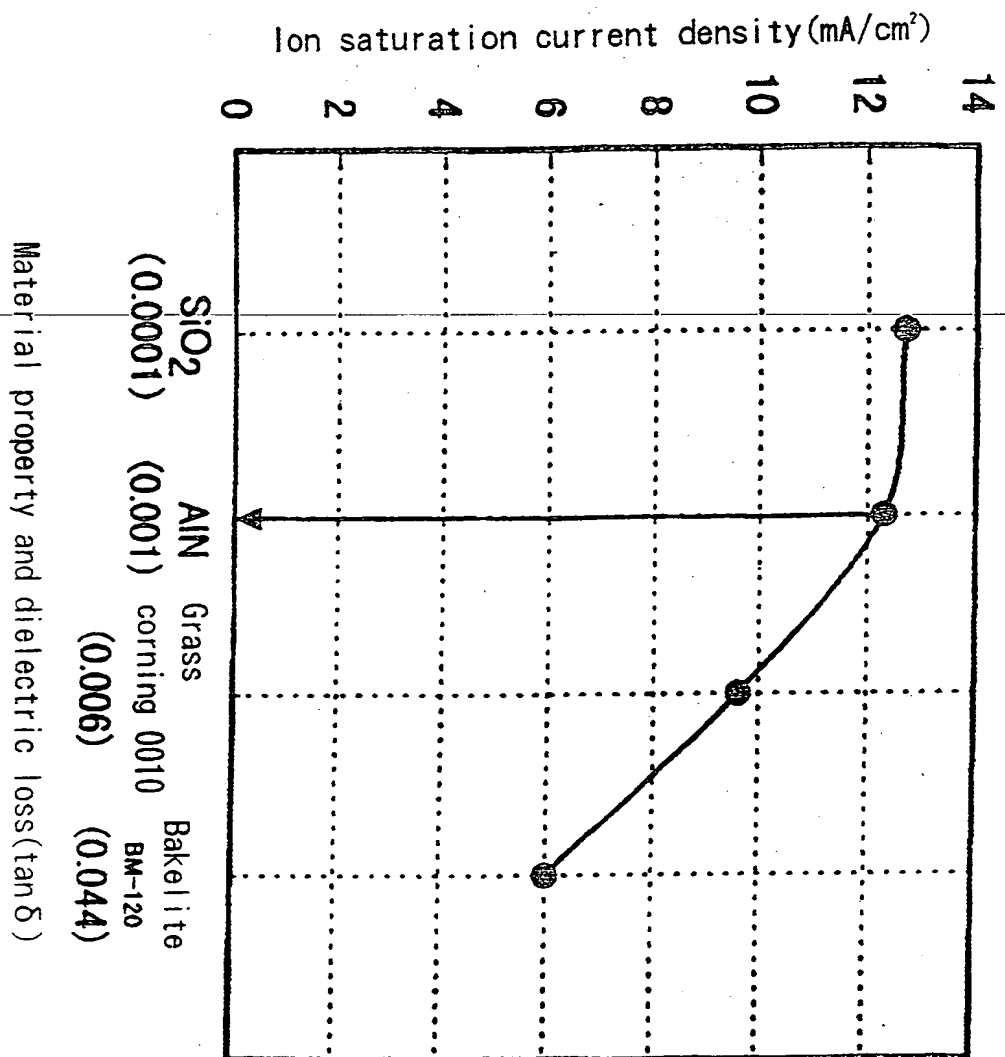


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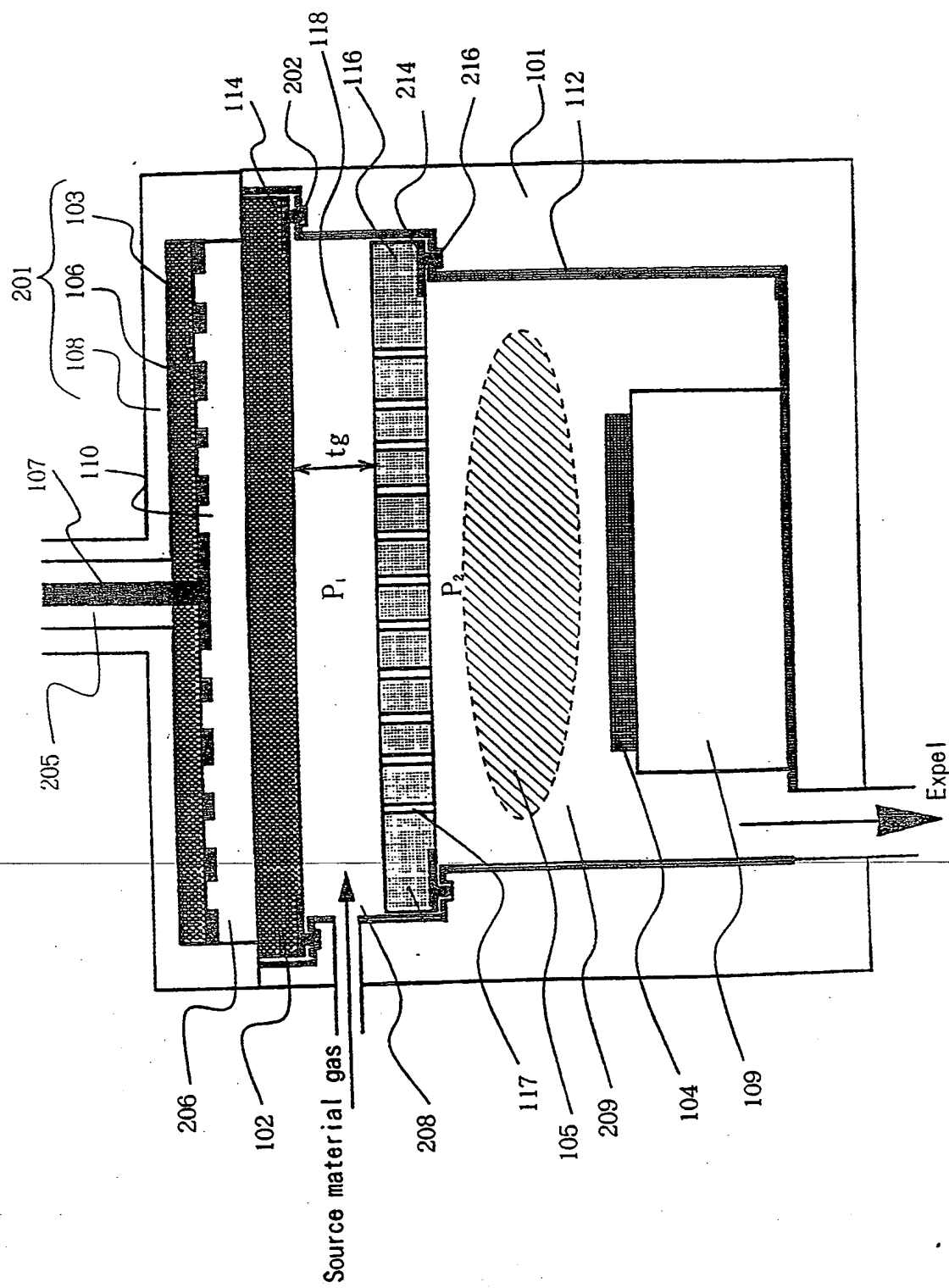


Fig. 15

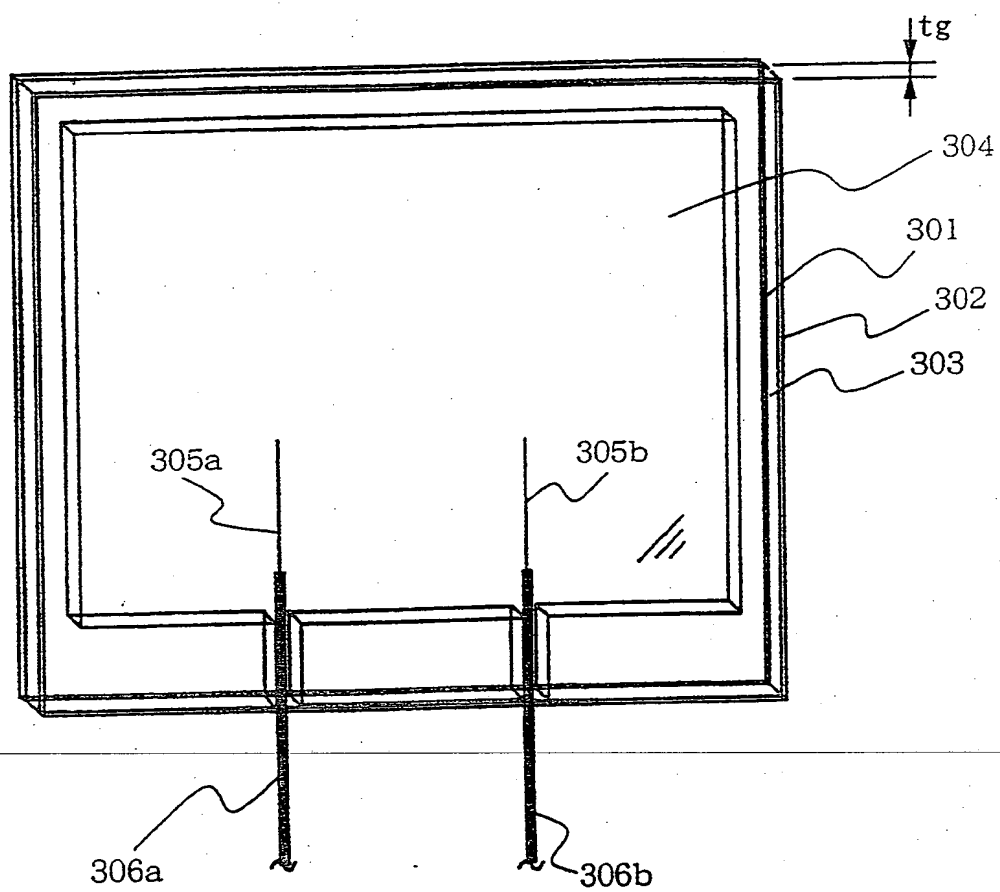


Fig. 16

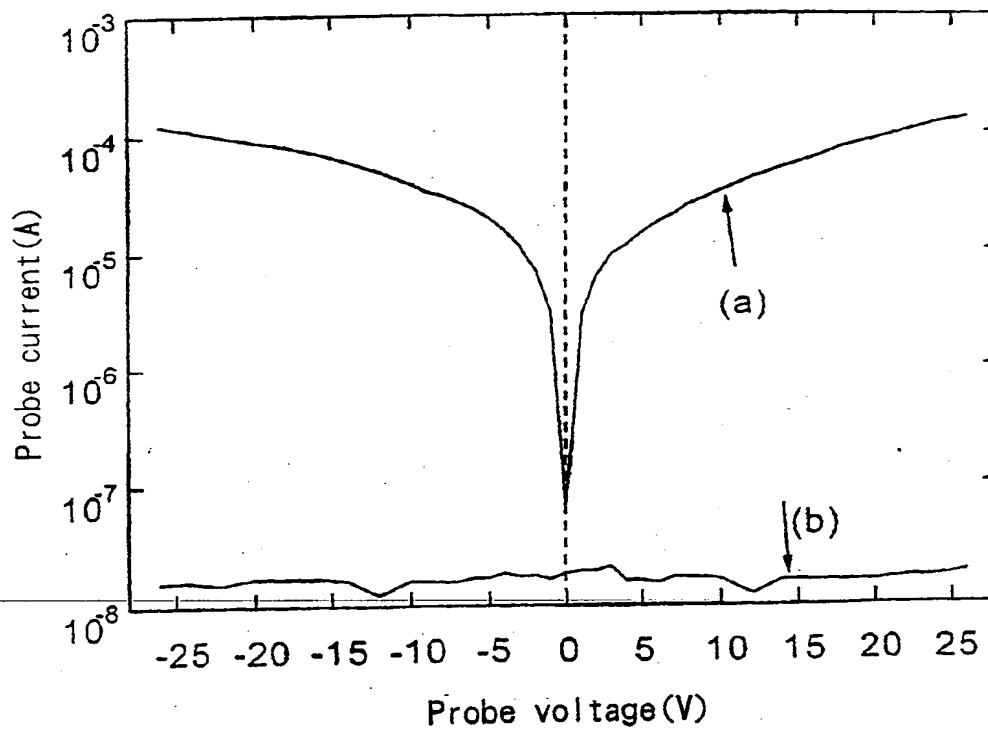


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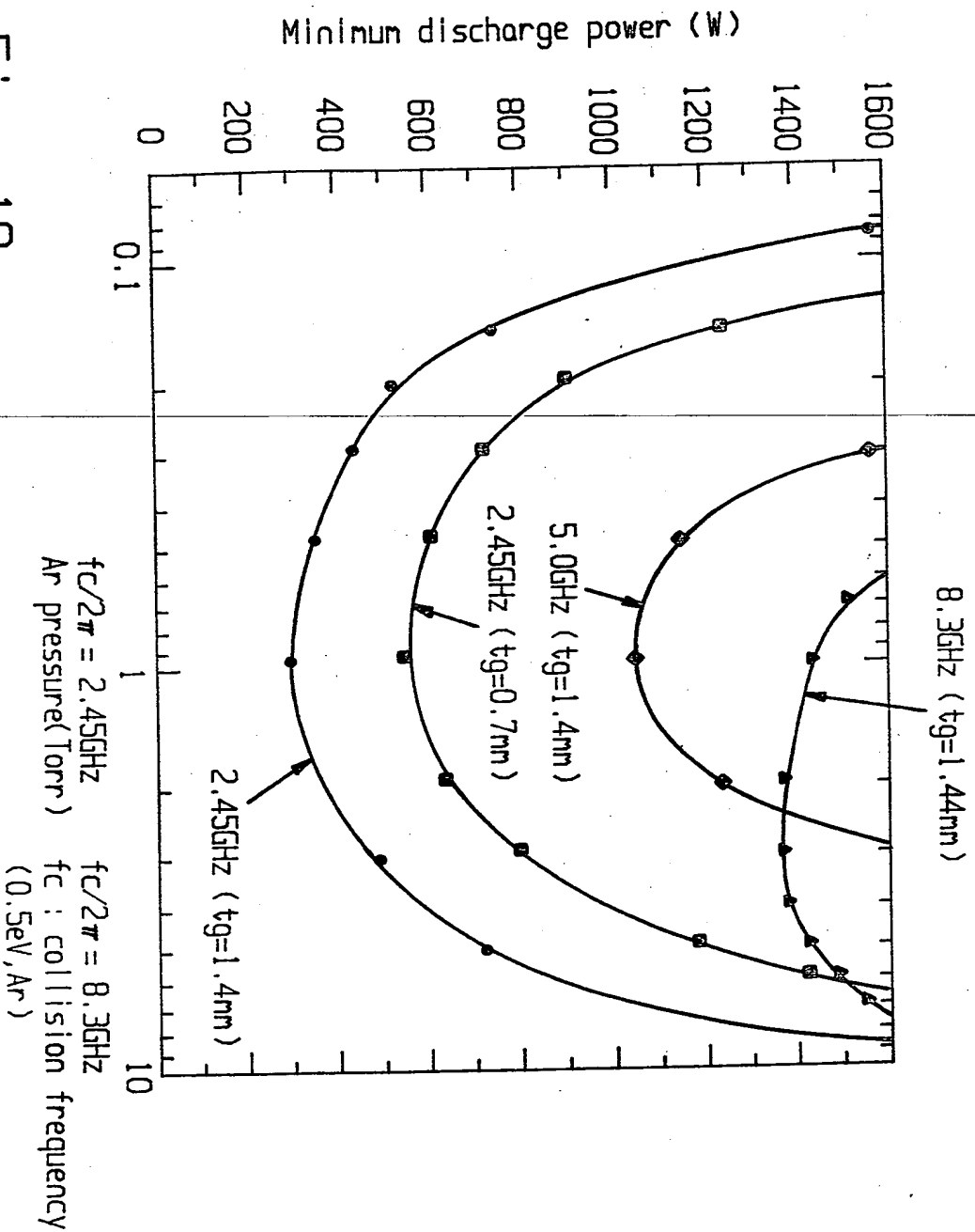


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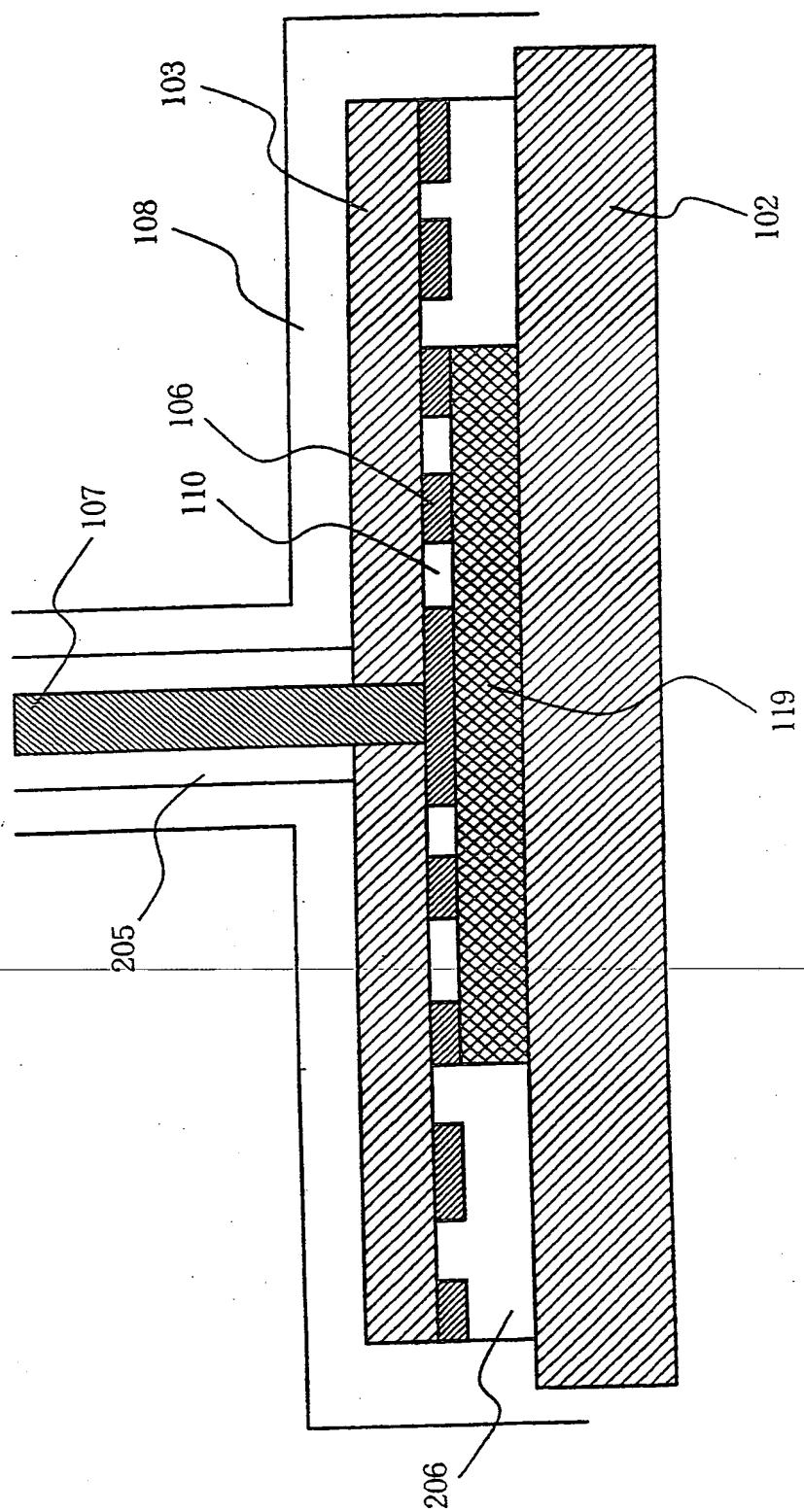


Fig. 19

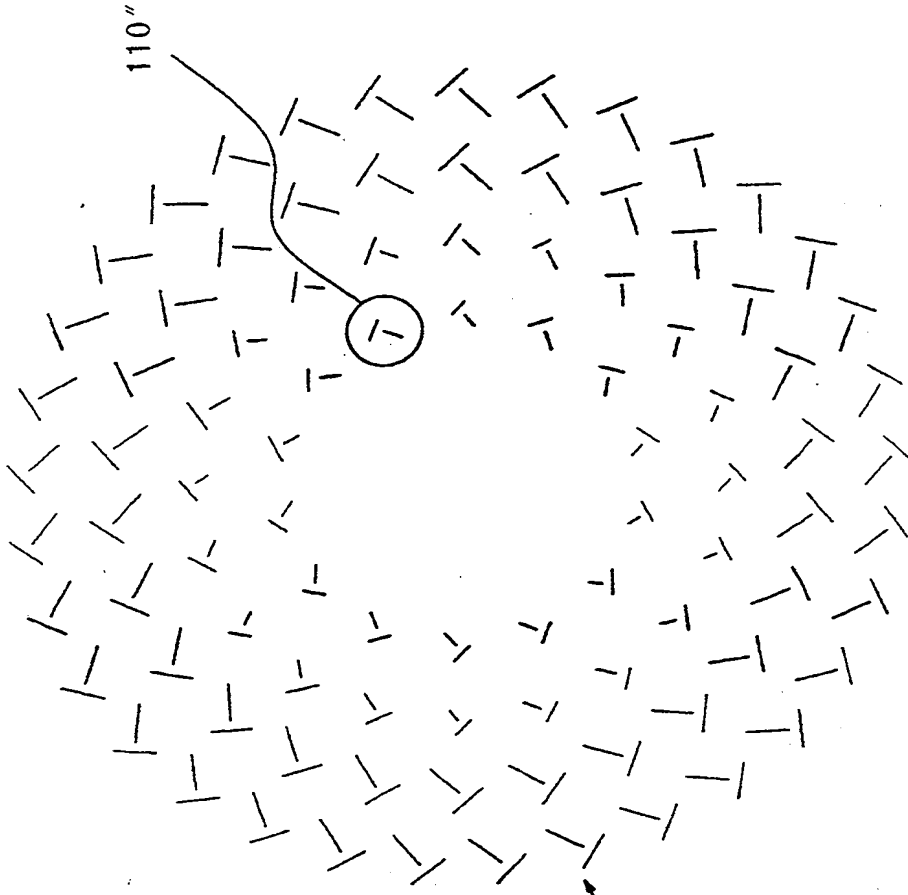


Fig. 20B

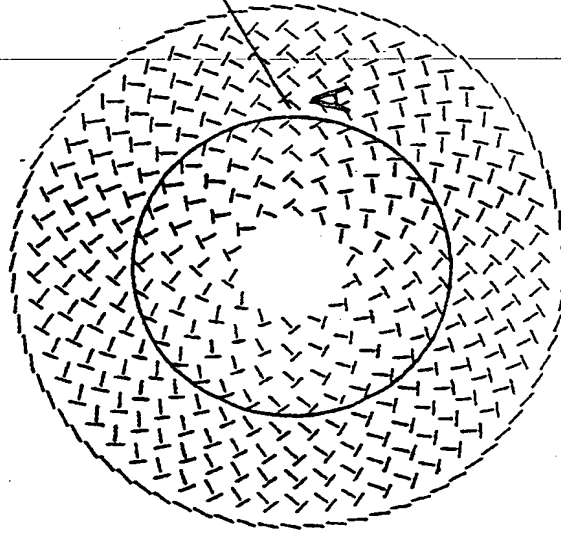


Fig. 20A

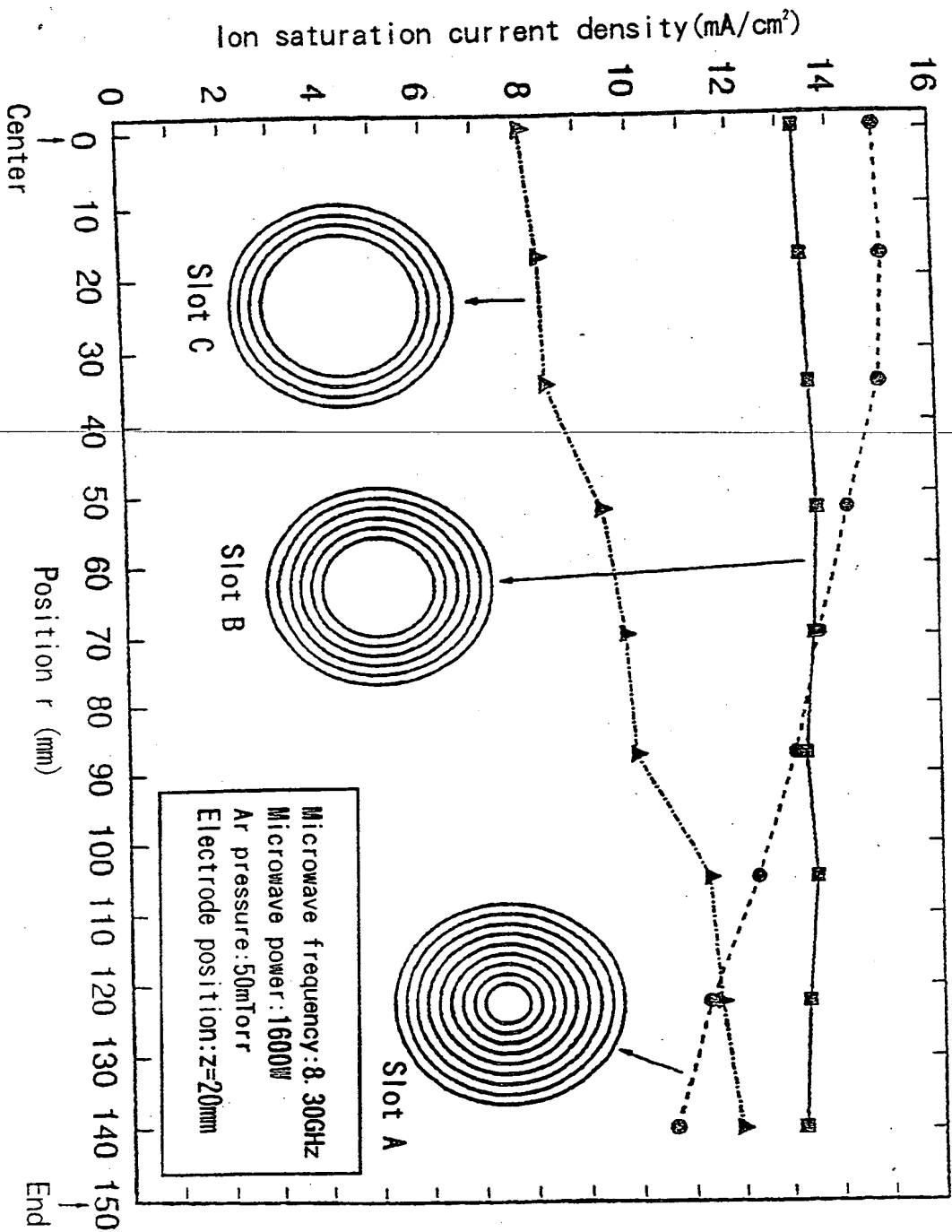


Fig. 21

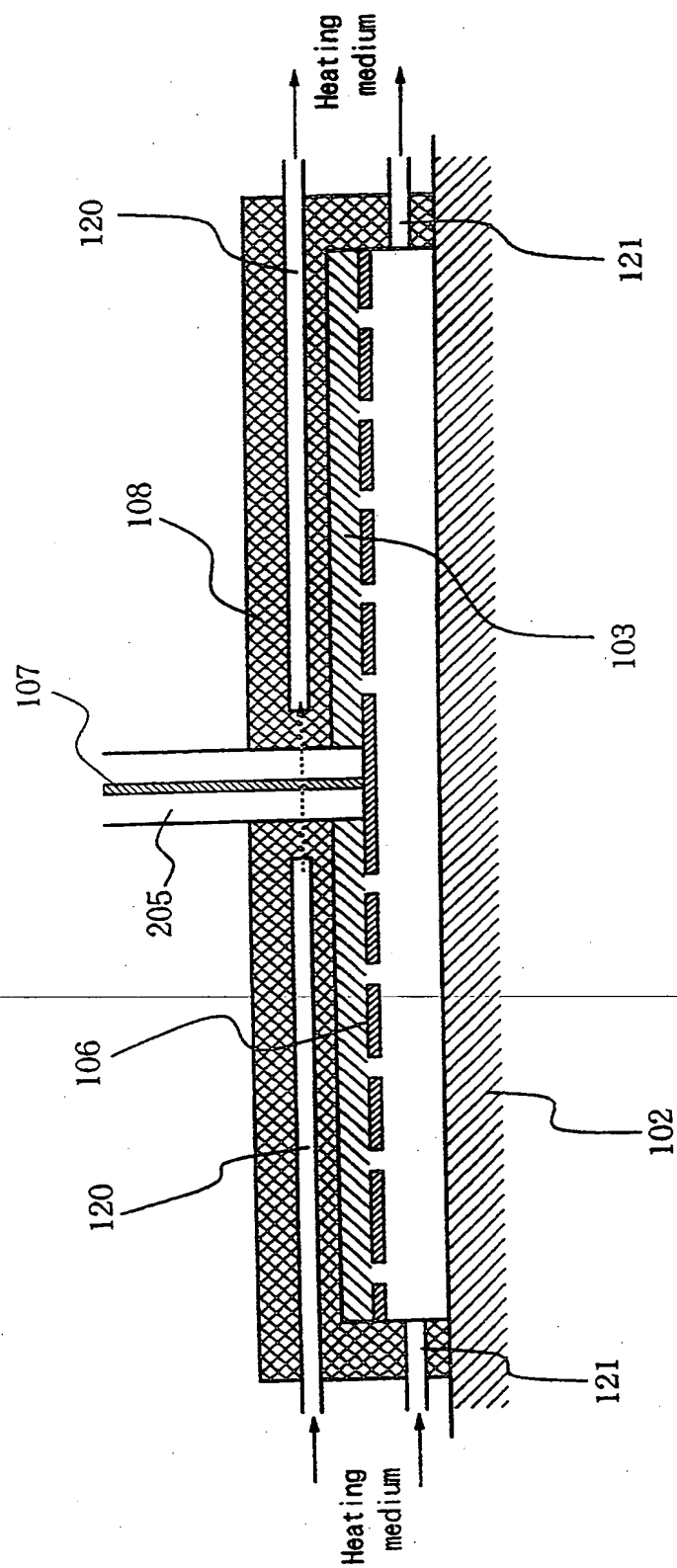


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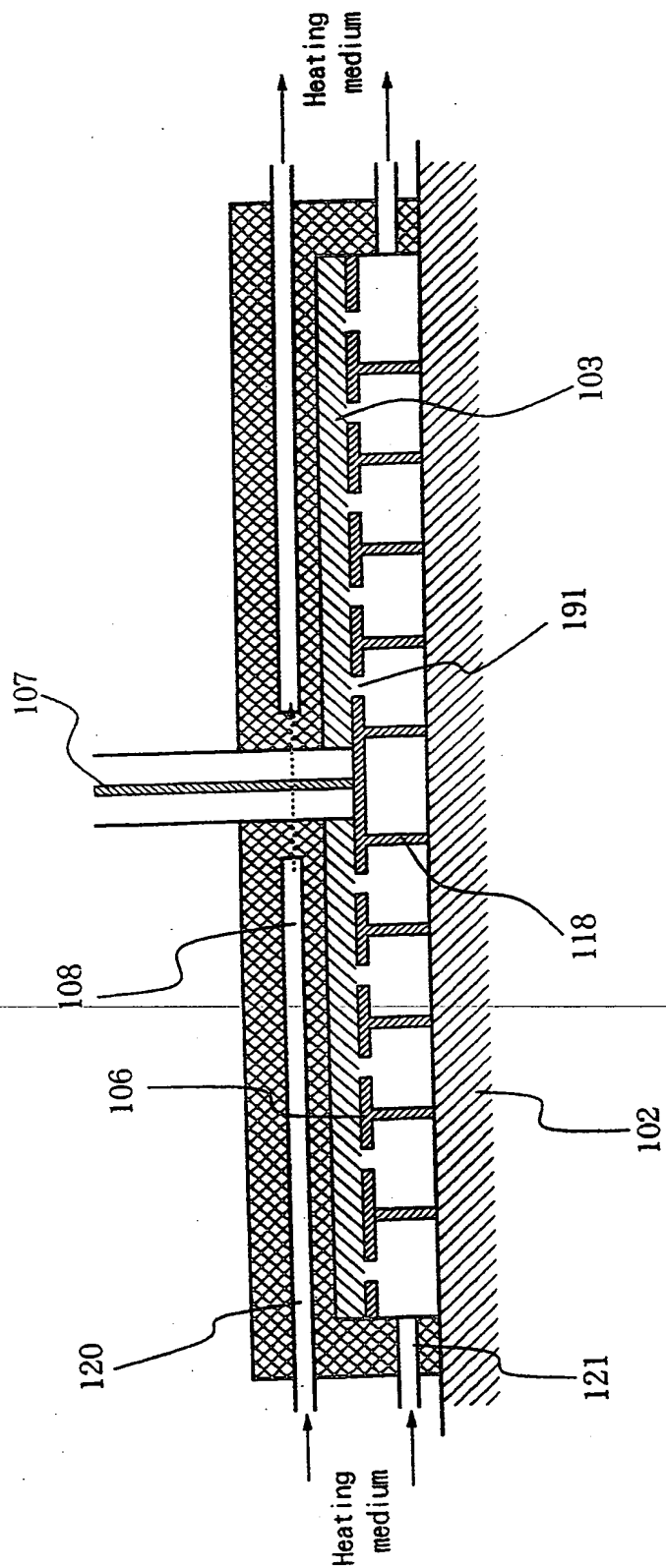


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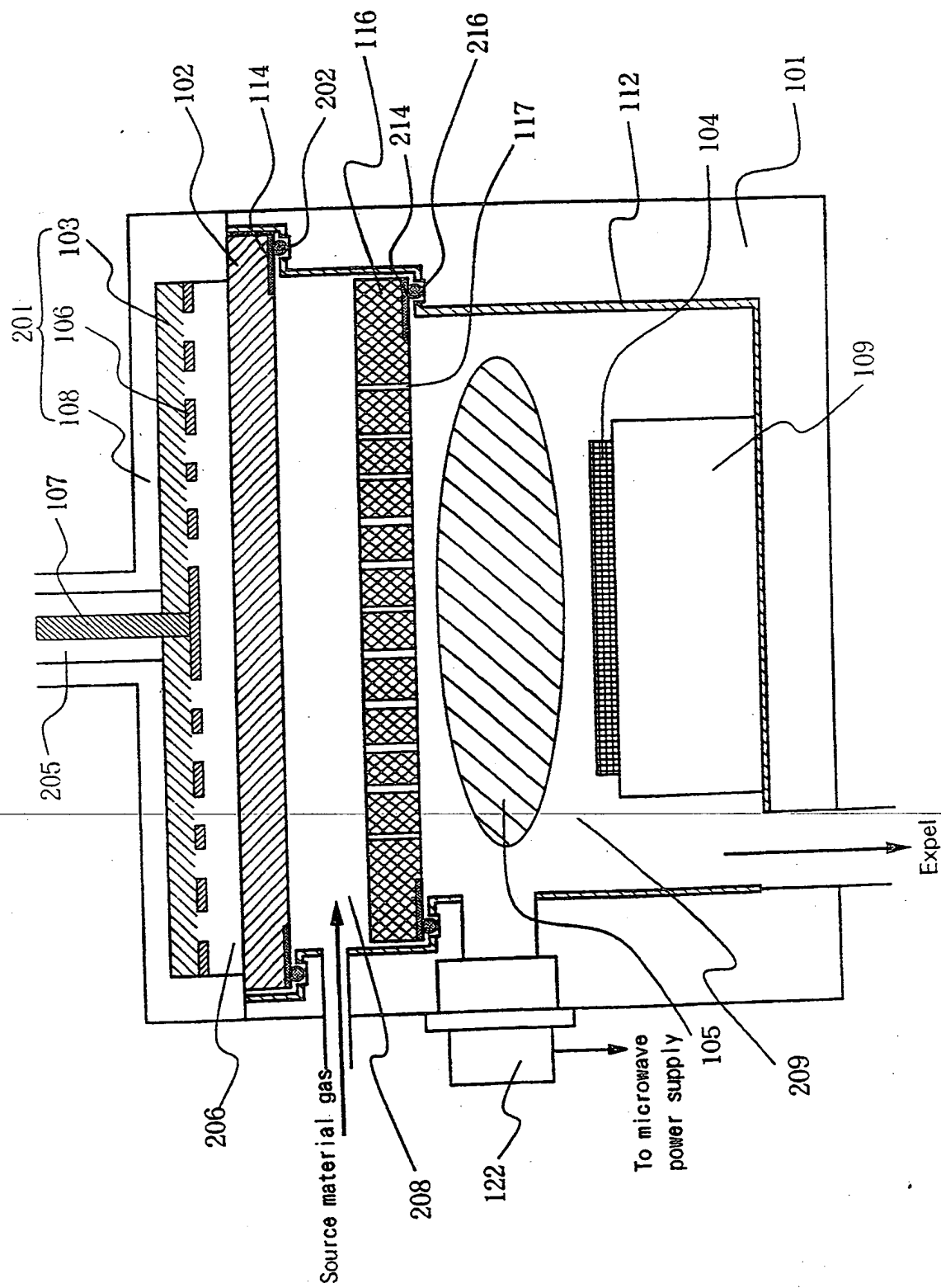


Fig. 24

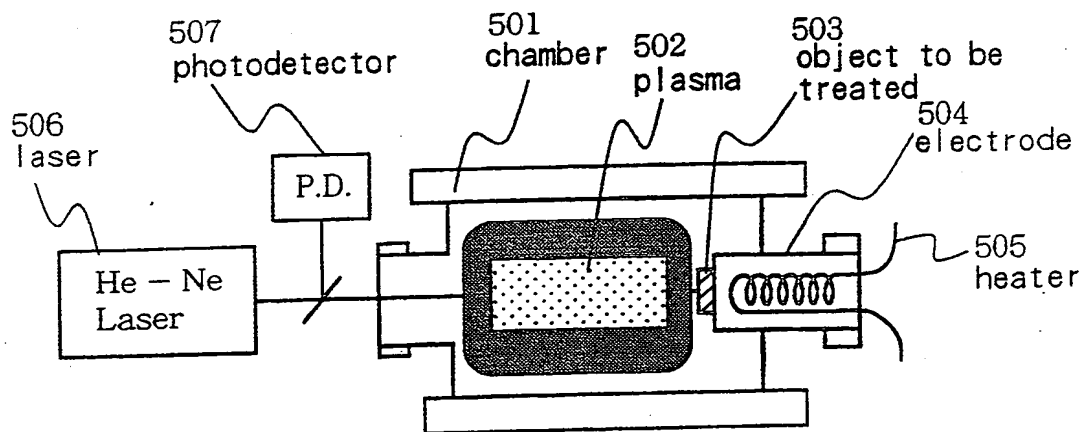


Fig. 25

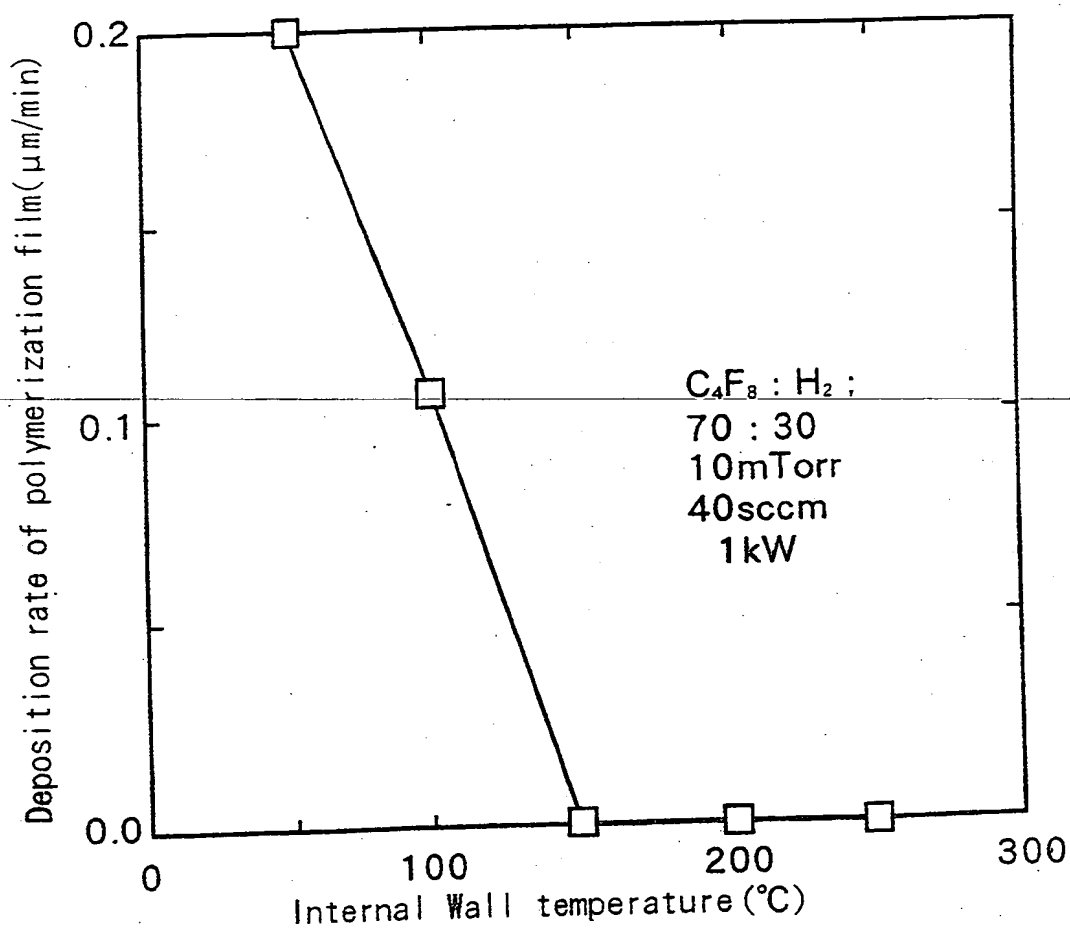


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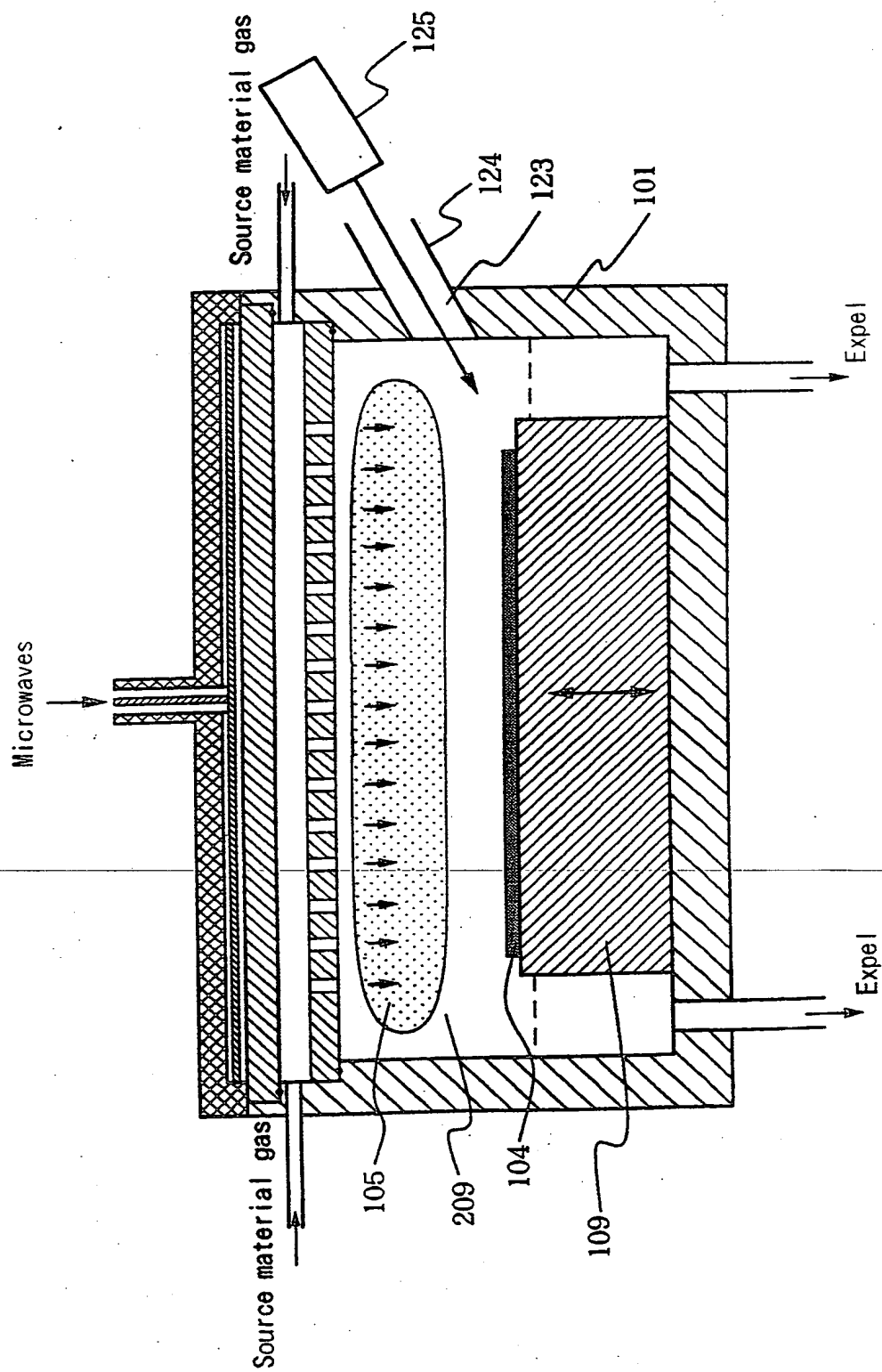
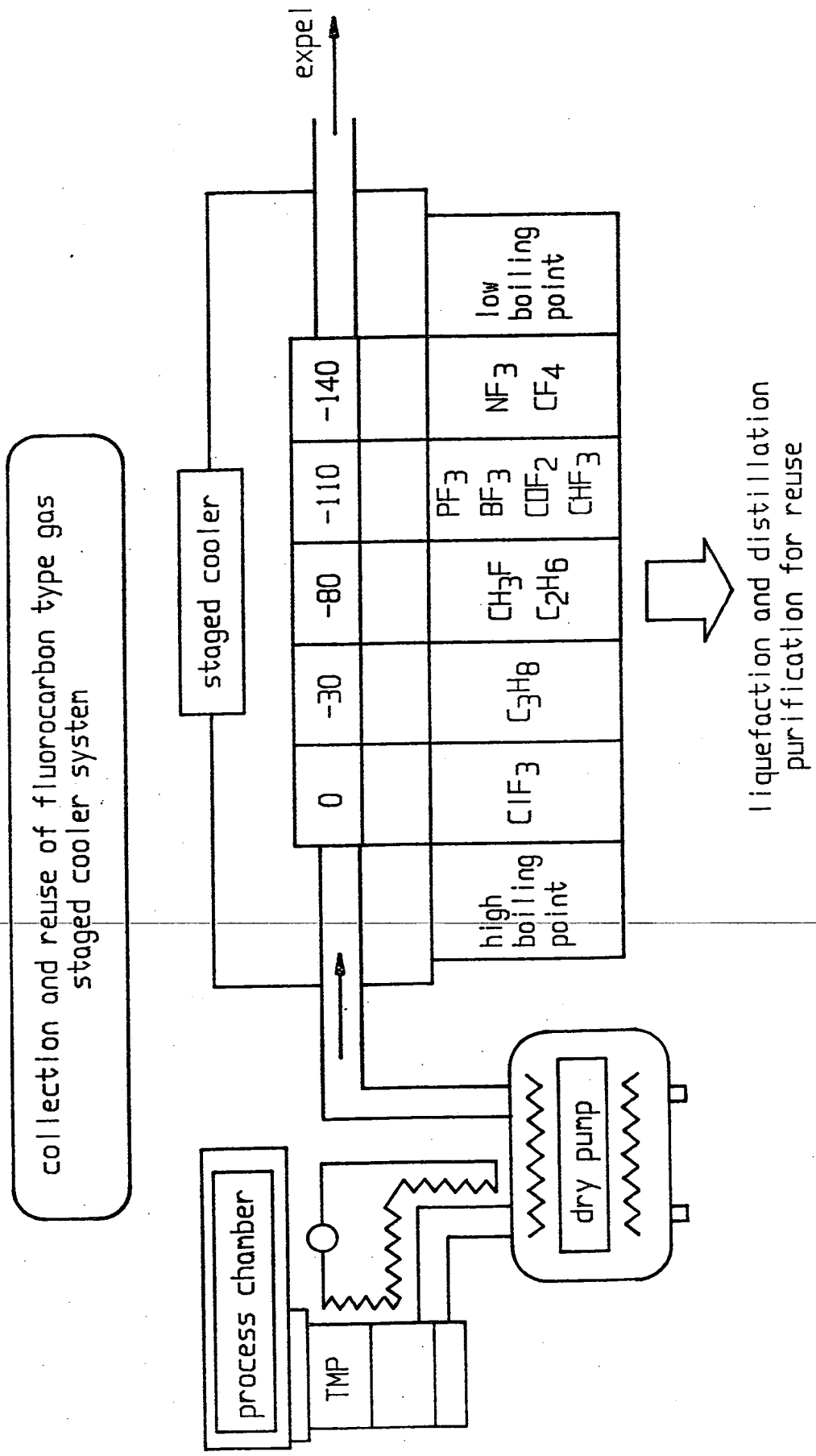


Fig. 27



global warming effects of fluorocarbon are 100,000 - 1,000,000 greater than CO₂

Fig. 28

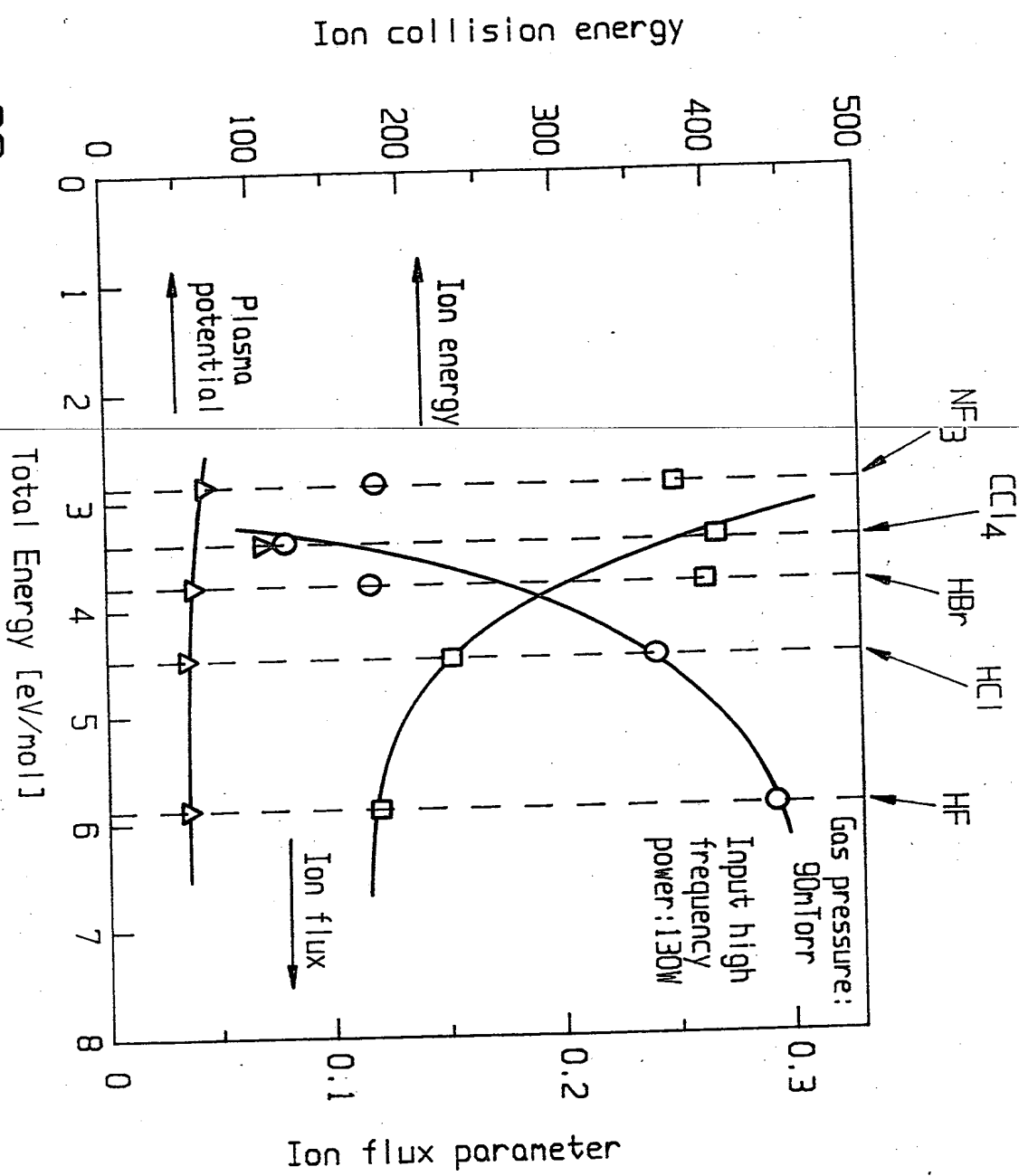


Fig. 29

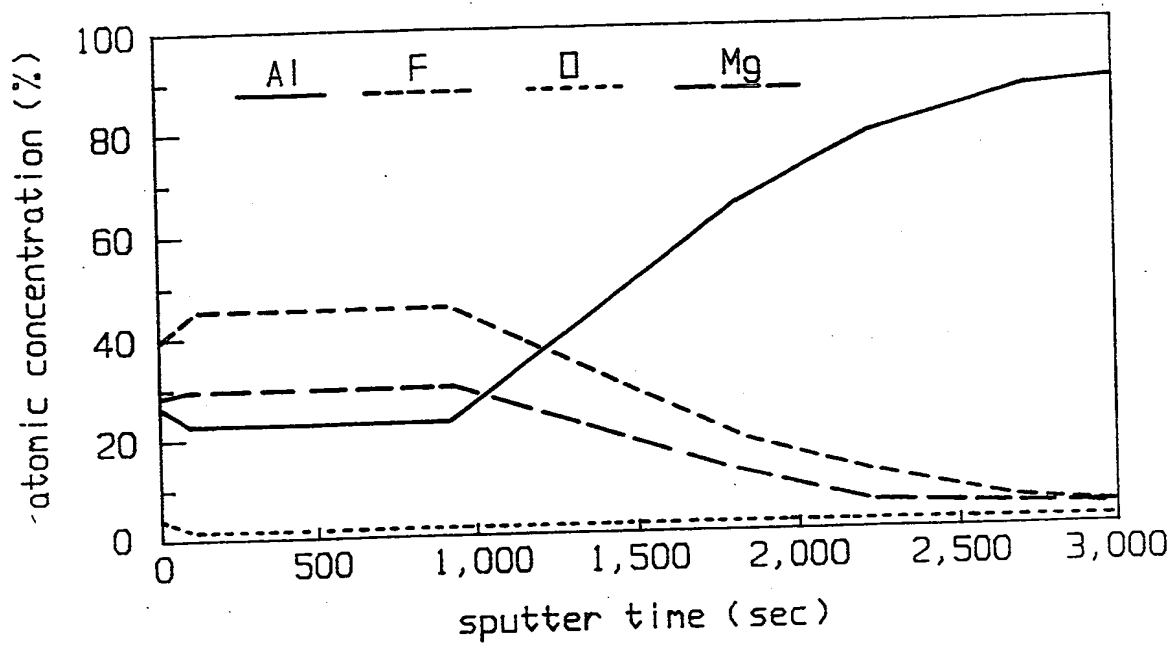


Fig. 30A

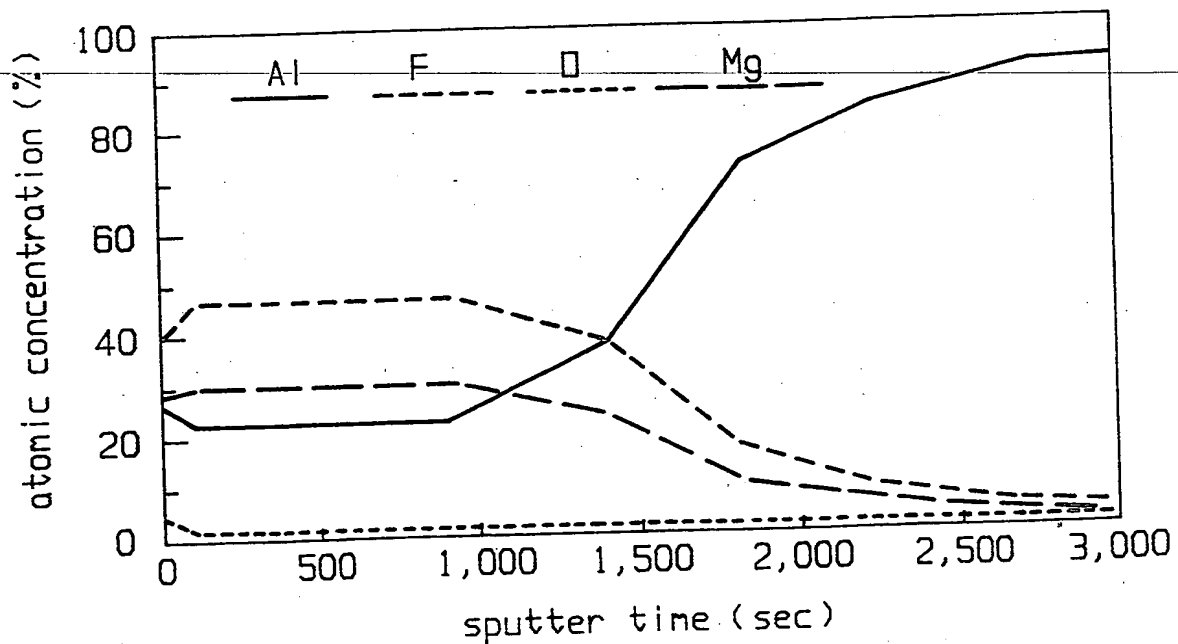


Fig. 30B

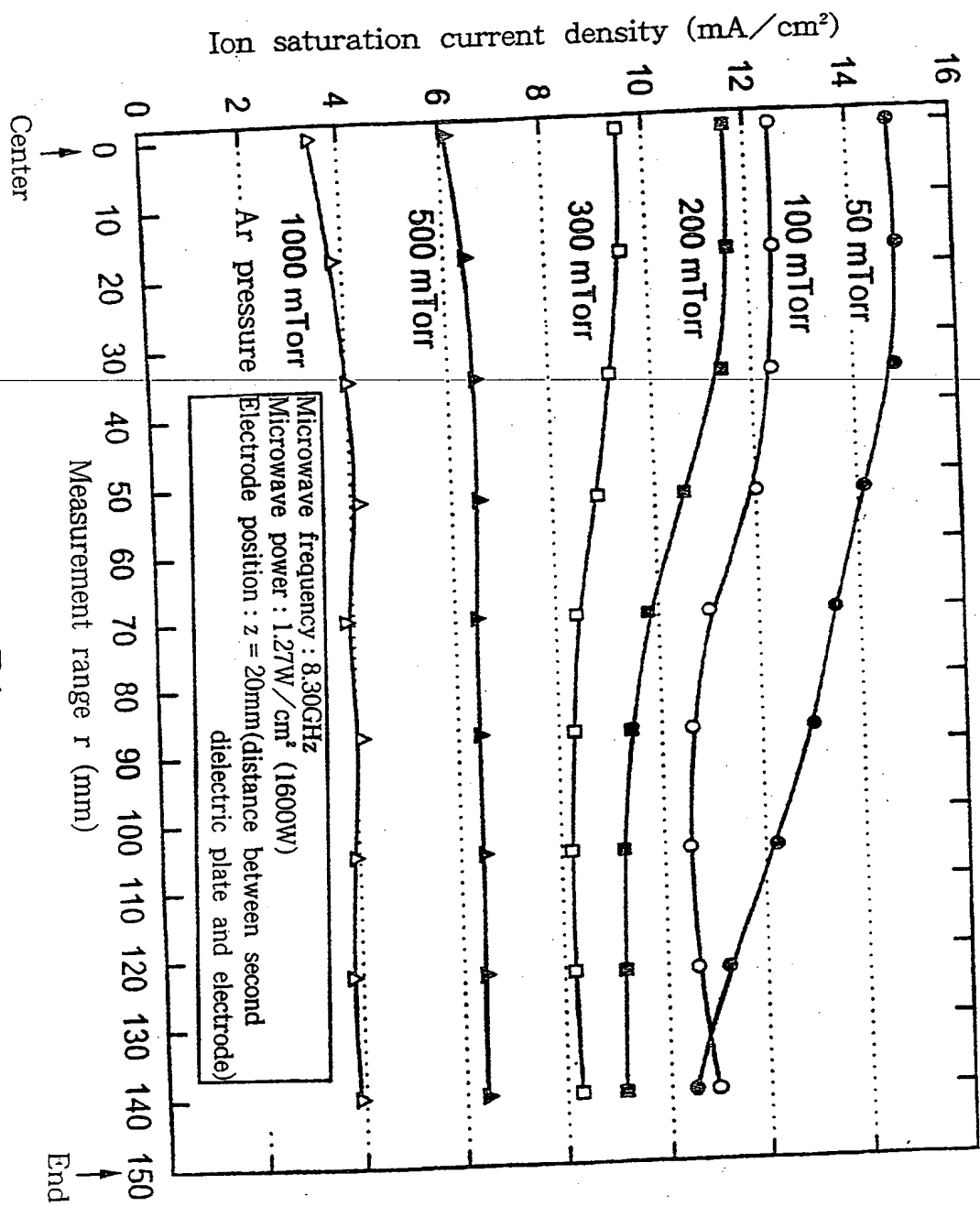


Fig. 31

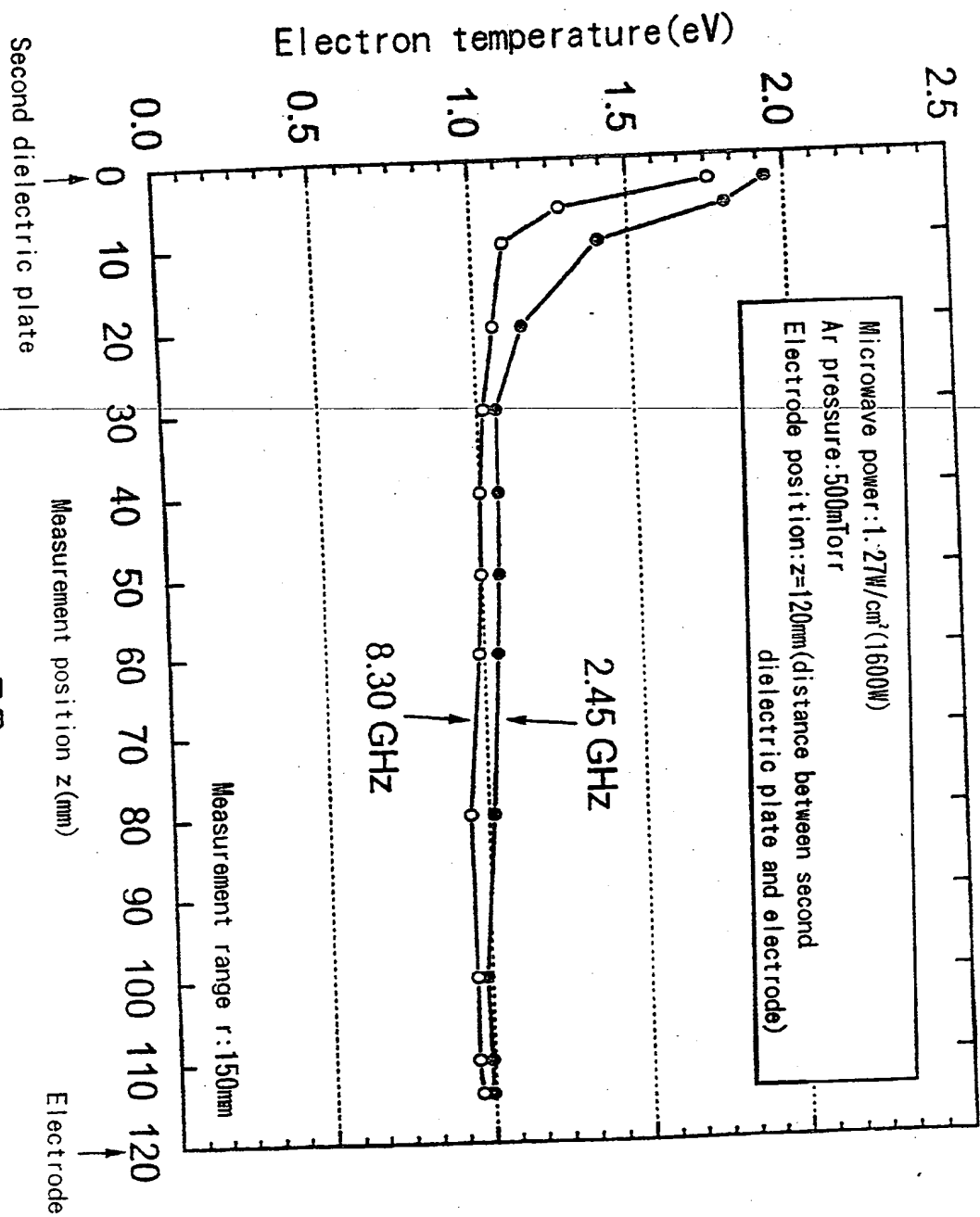


Fig. 32

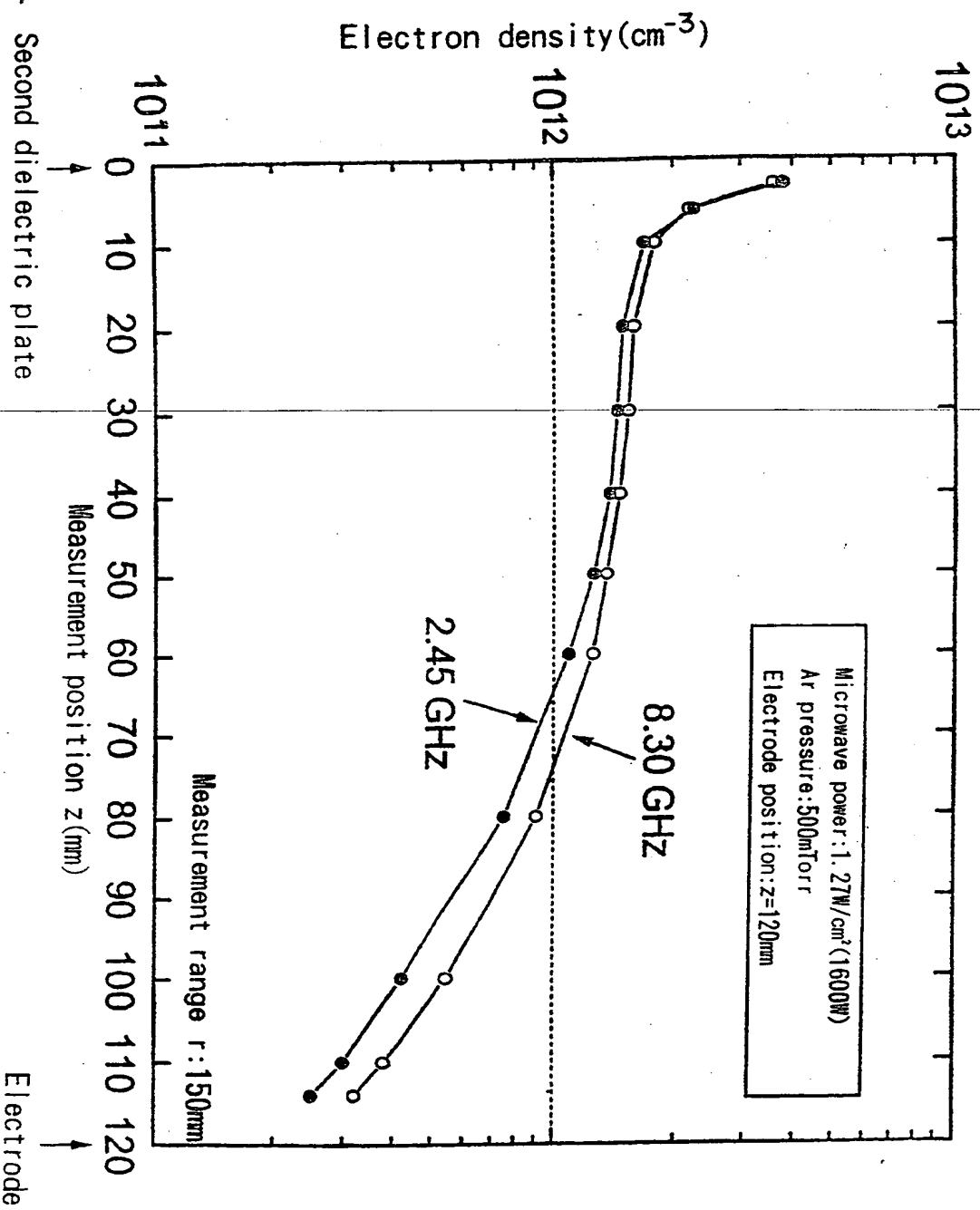


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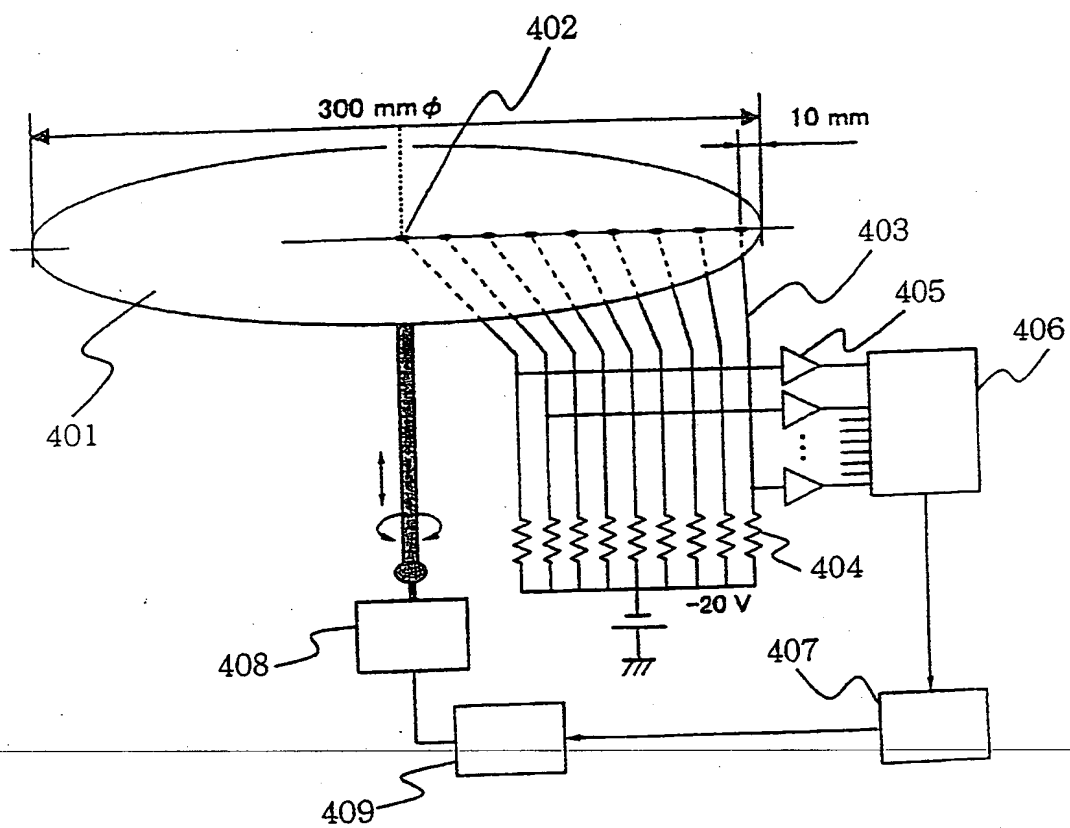


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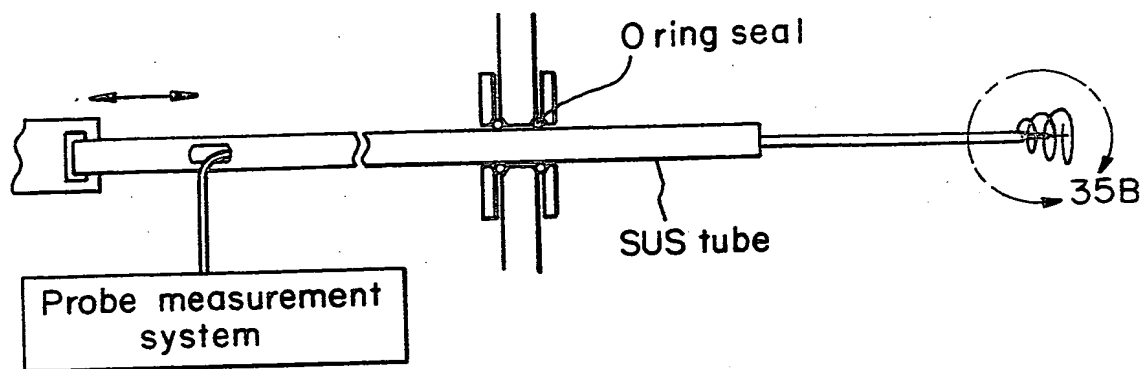


Fig. 35A

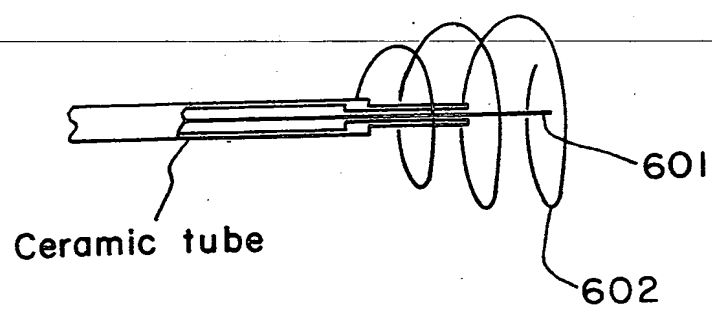


Fig. 35B

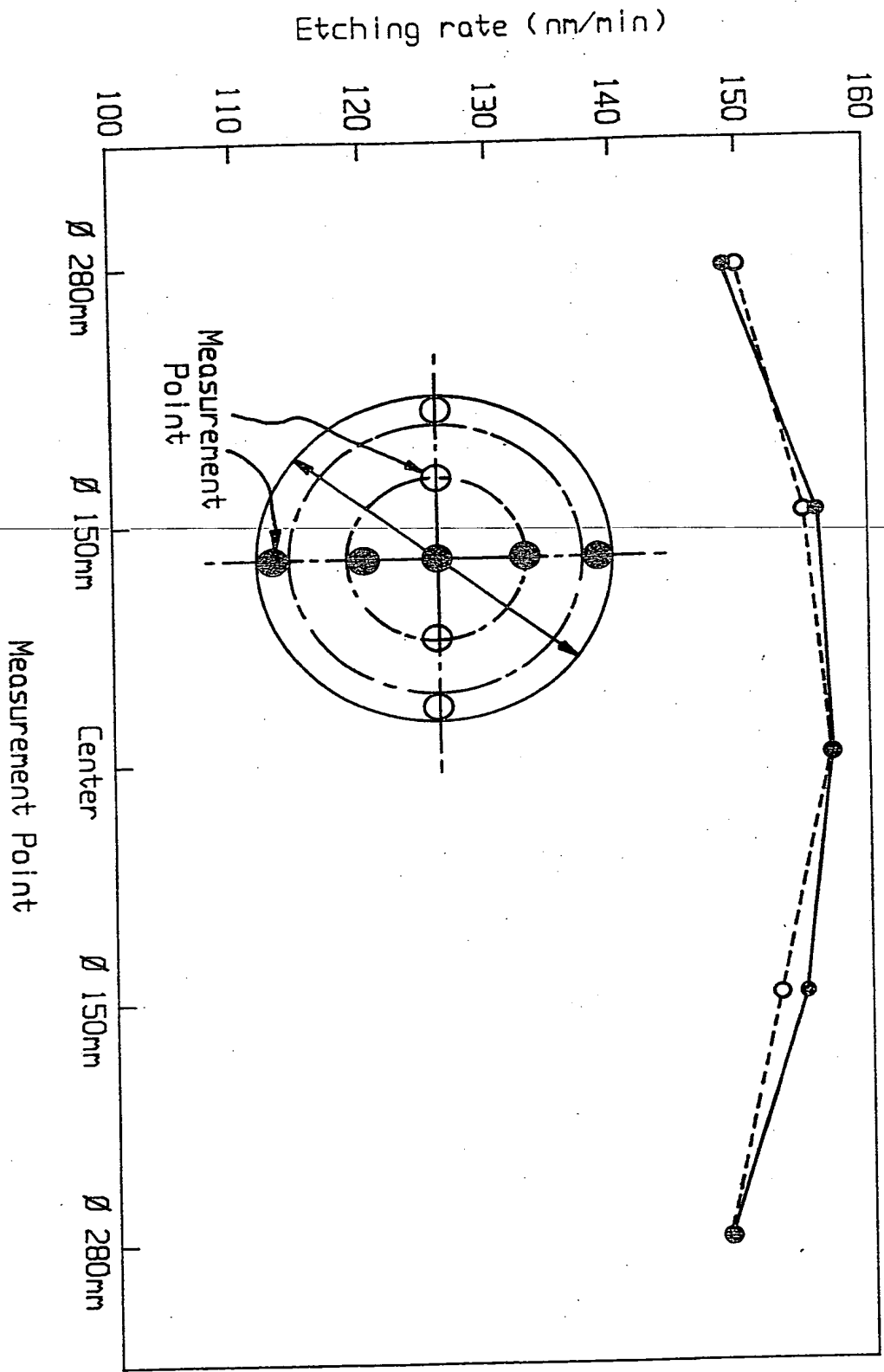


Fig. 36

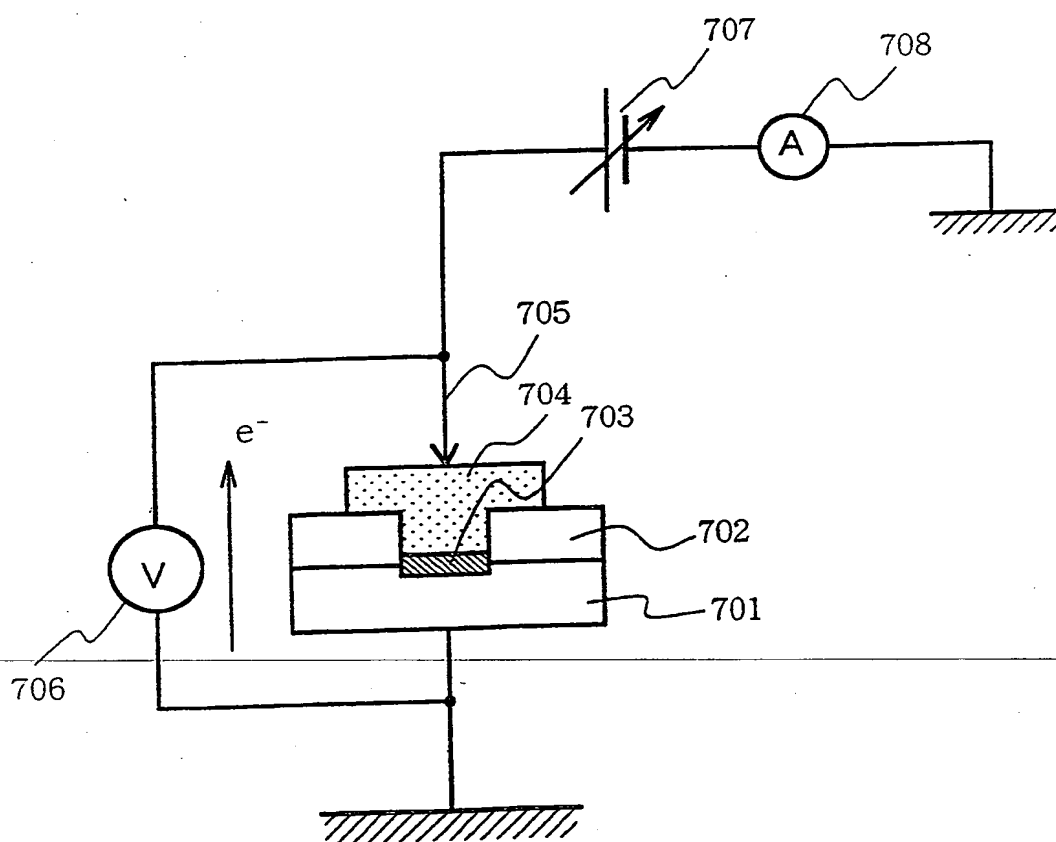


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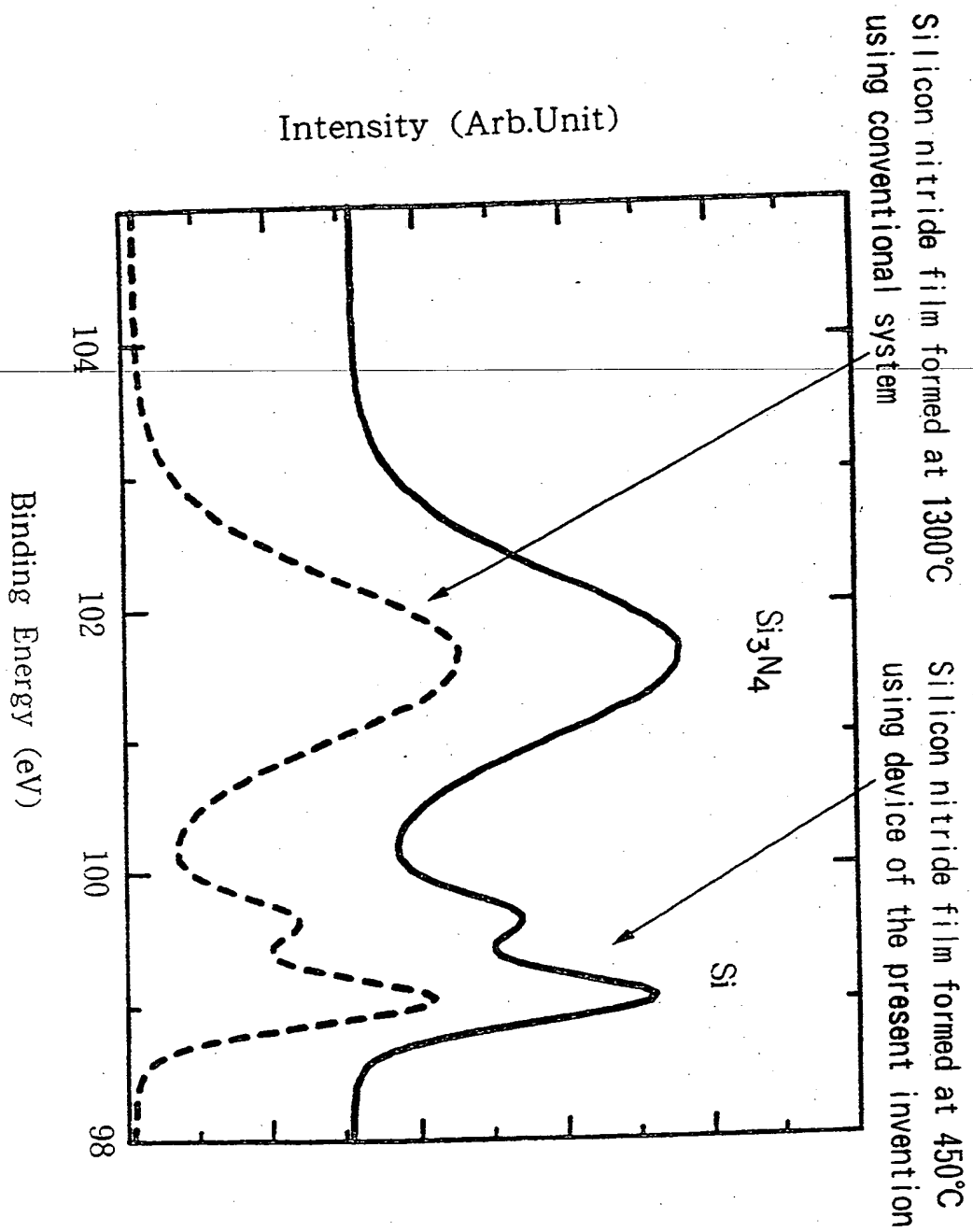


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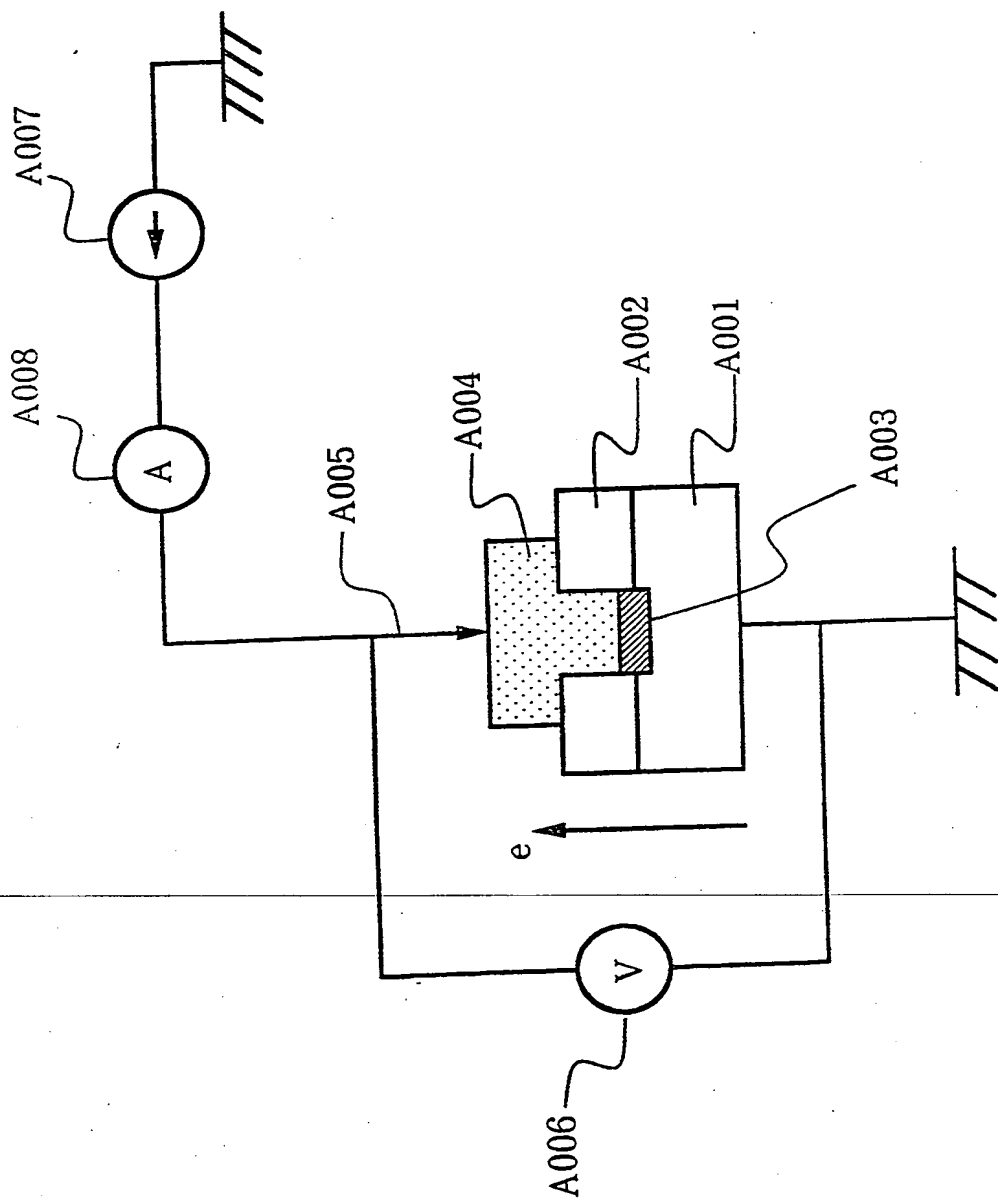


Fig. 40

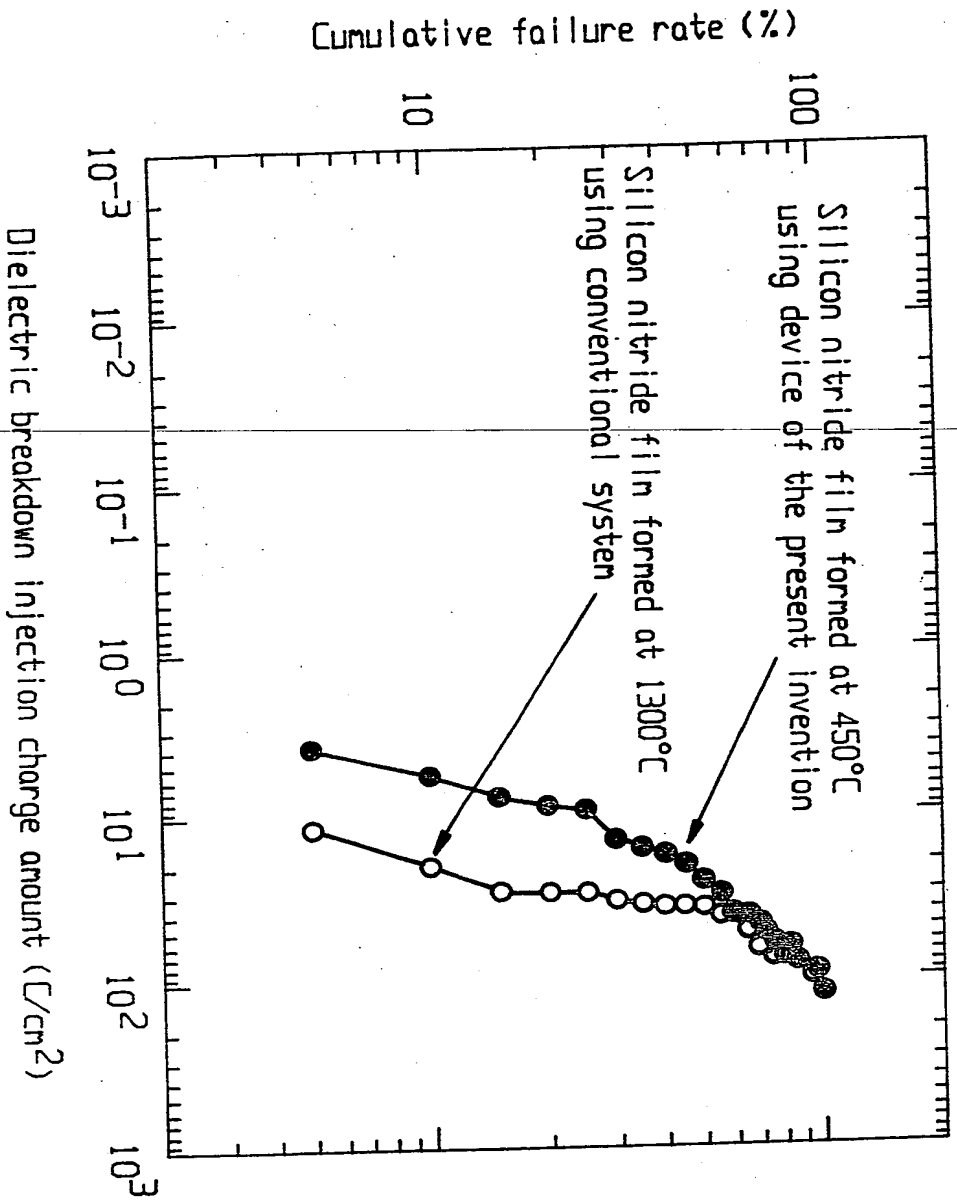


Fig. 41

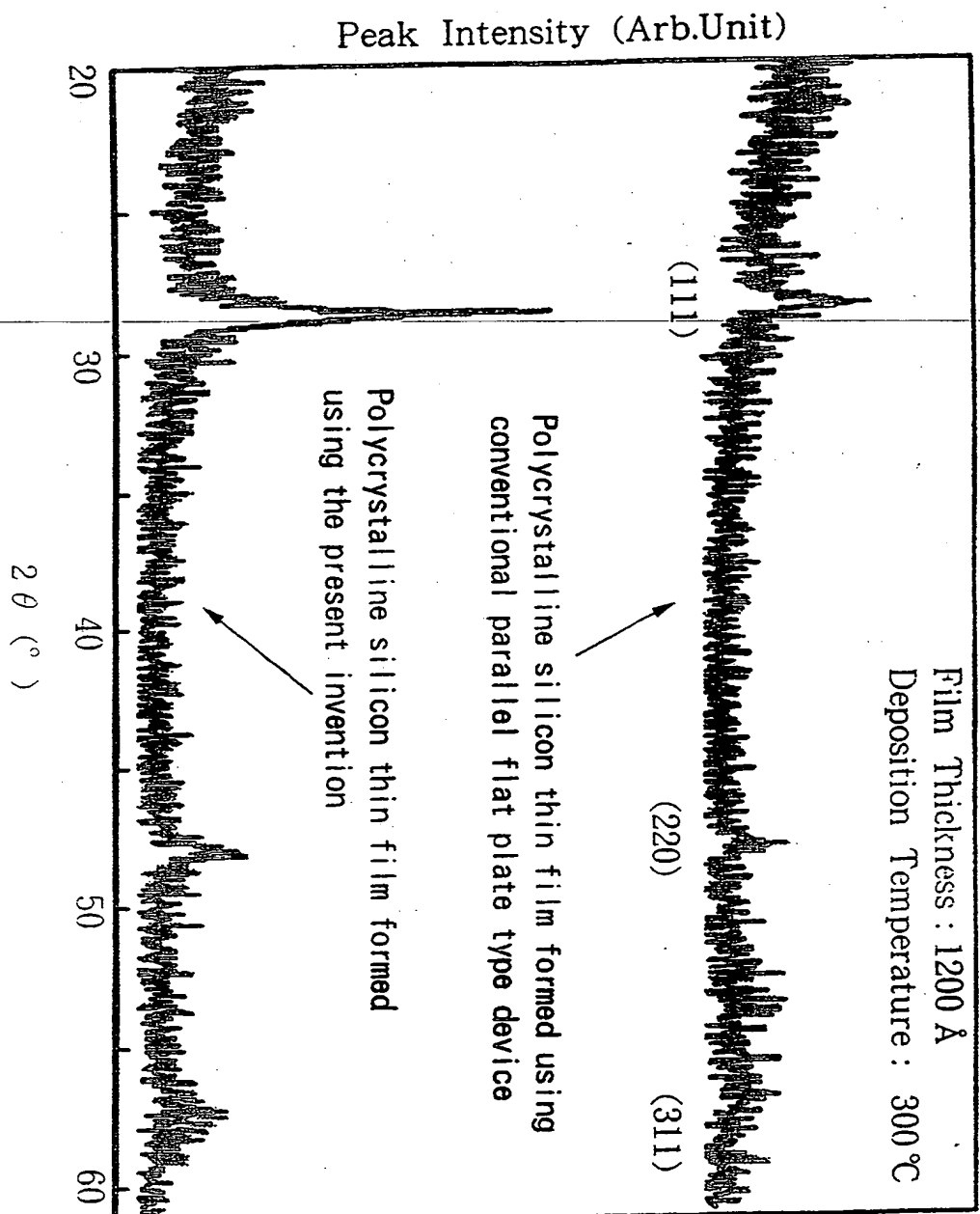
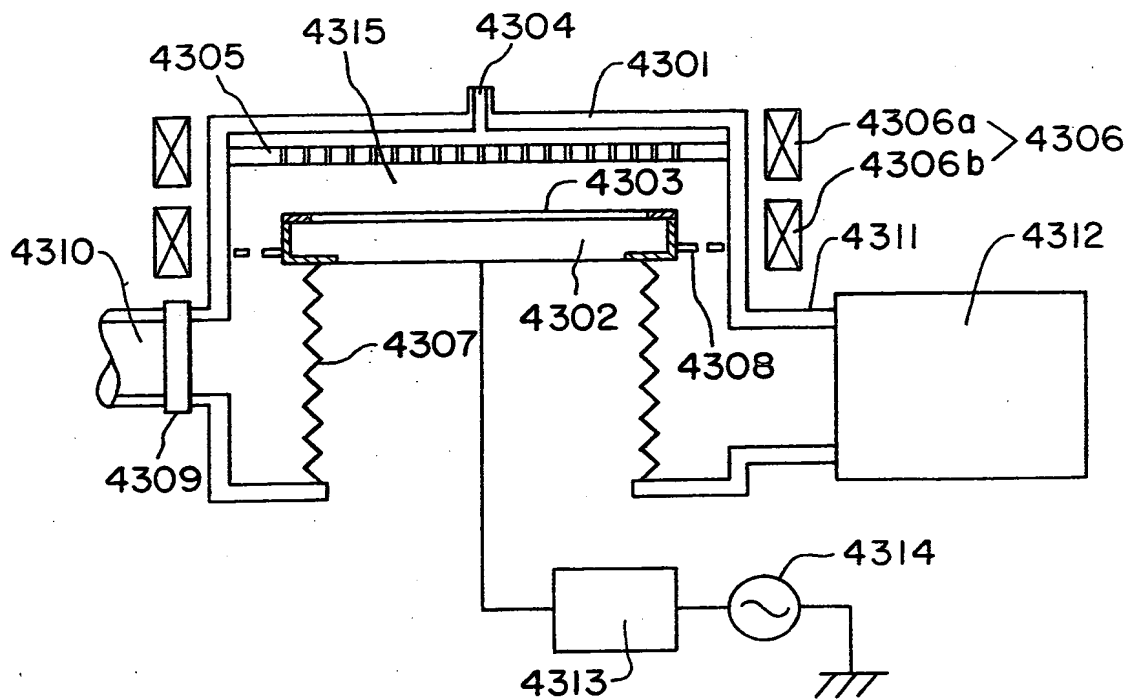
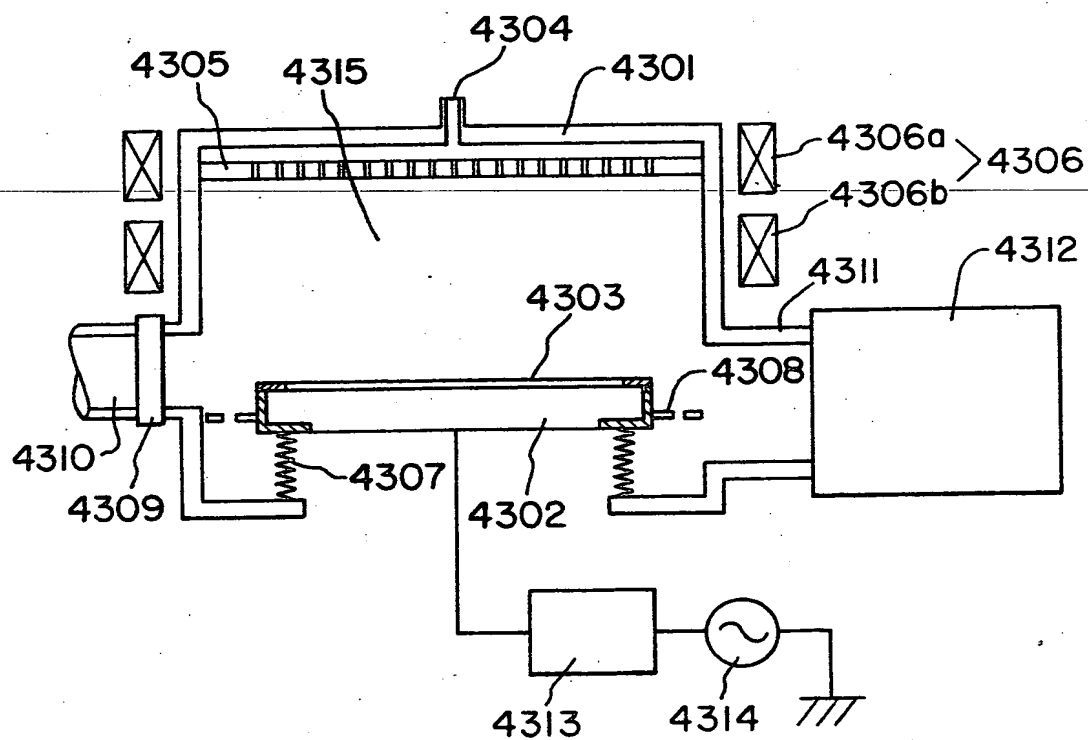


Fig. 42



PRIOR ART
Fig. 43A



PRIOR ART
Fig. 43B

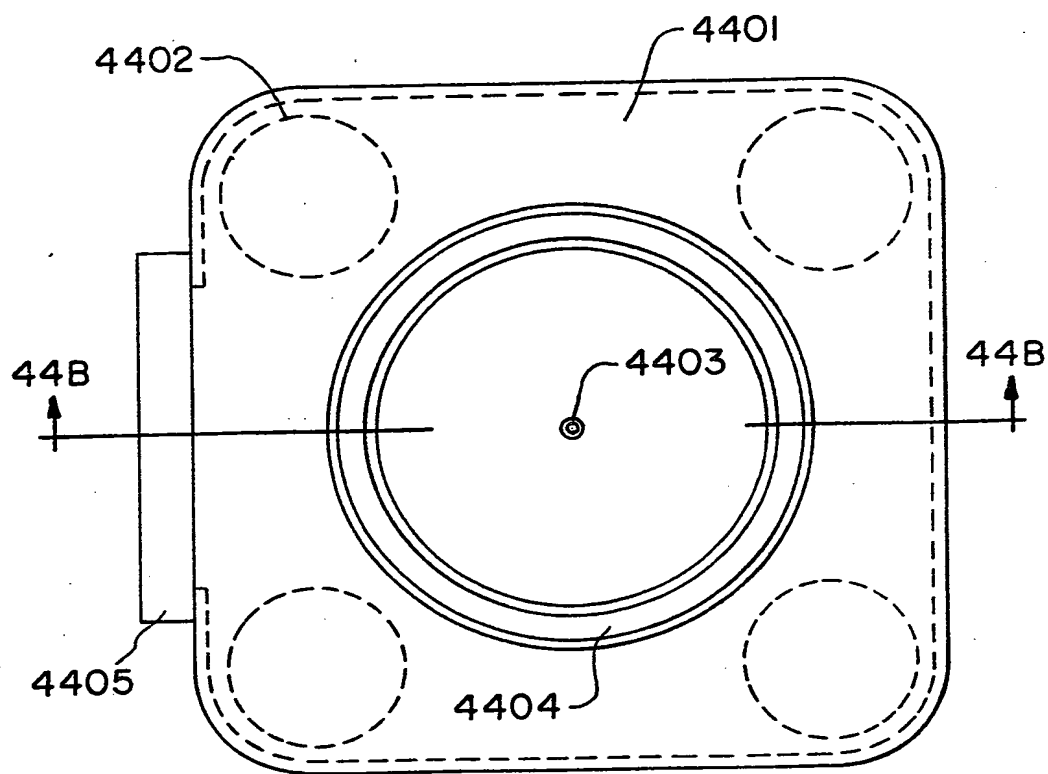


Fig. 44A

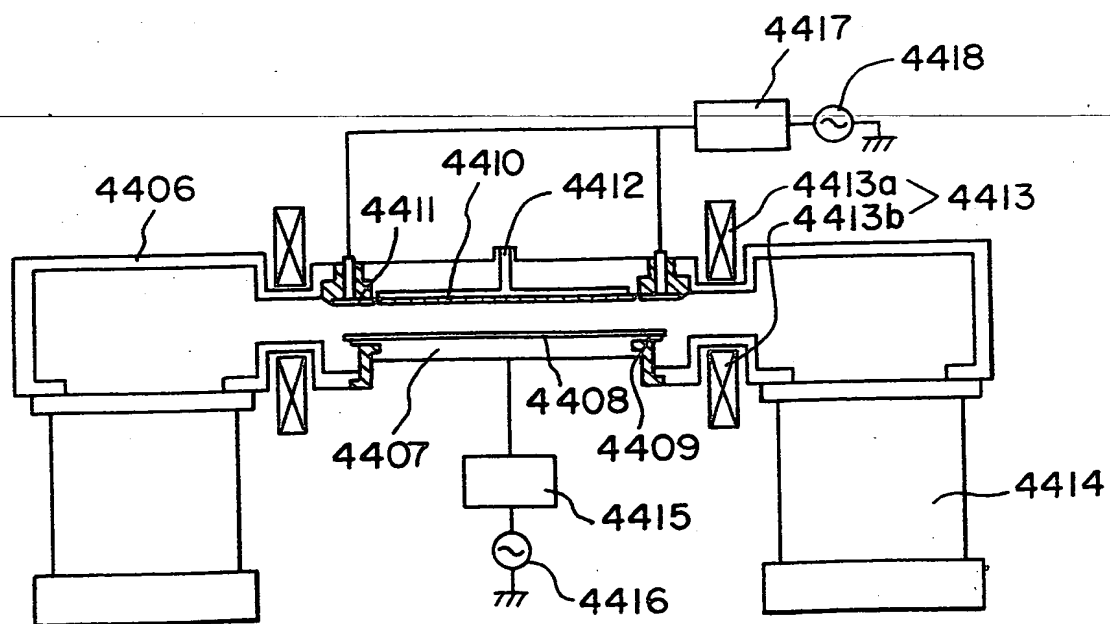


Fig. 44B

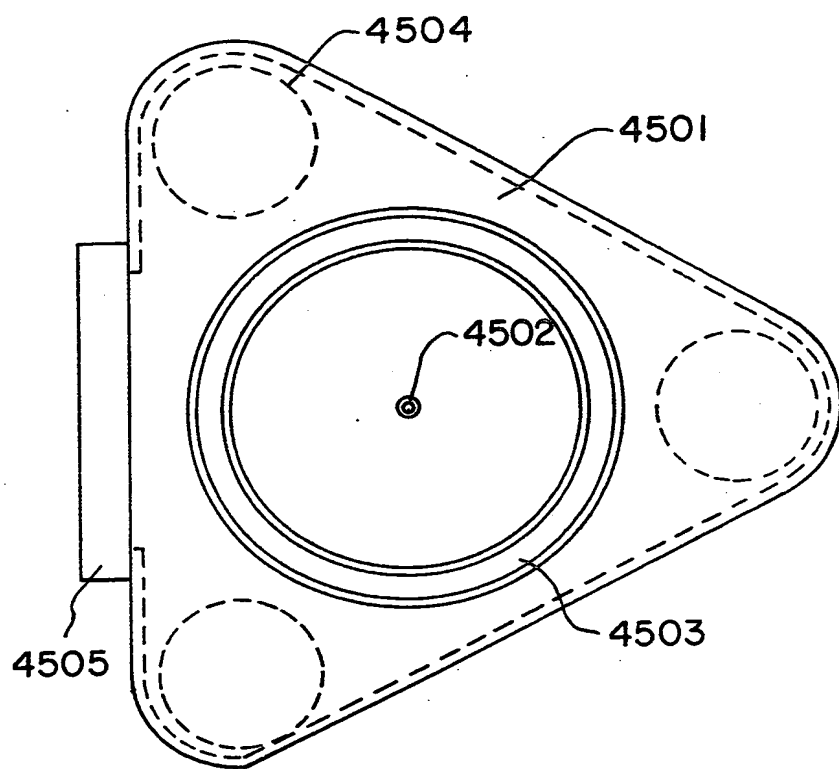


Fig. 45

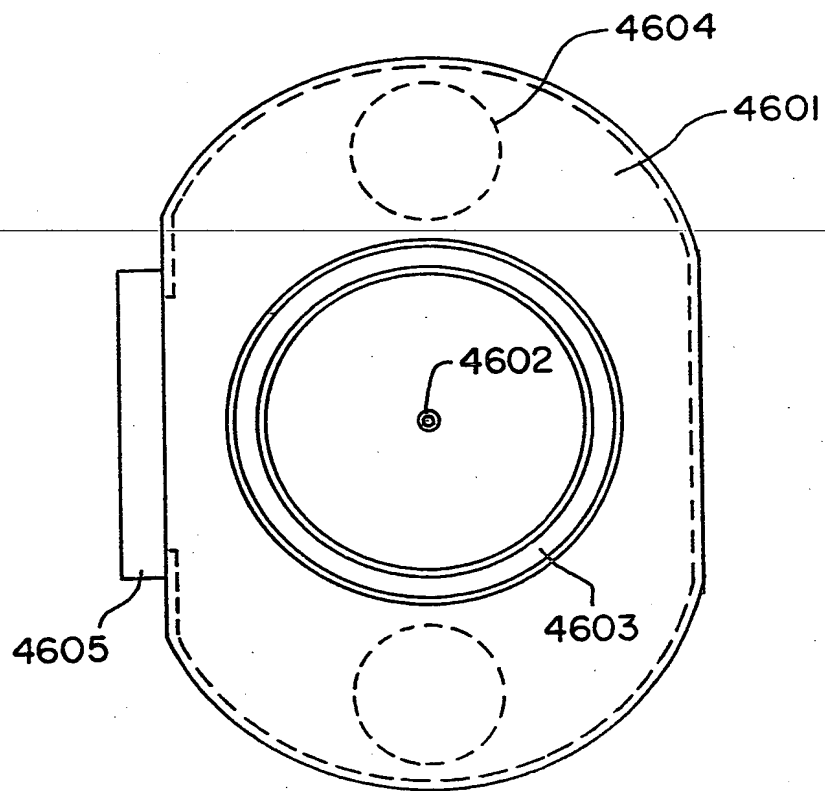


Fig. 46

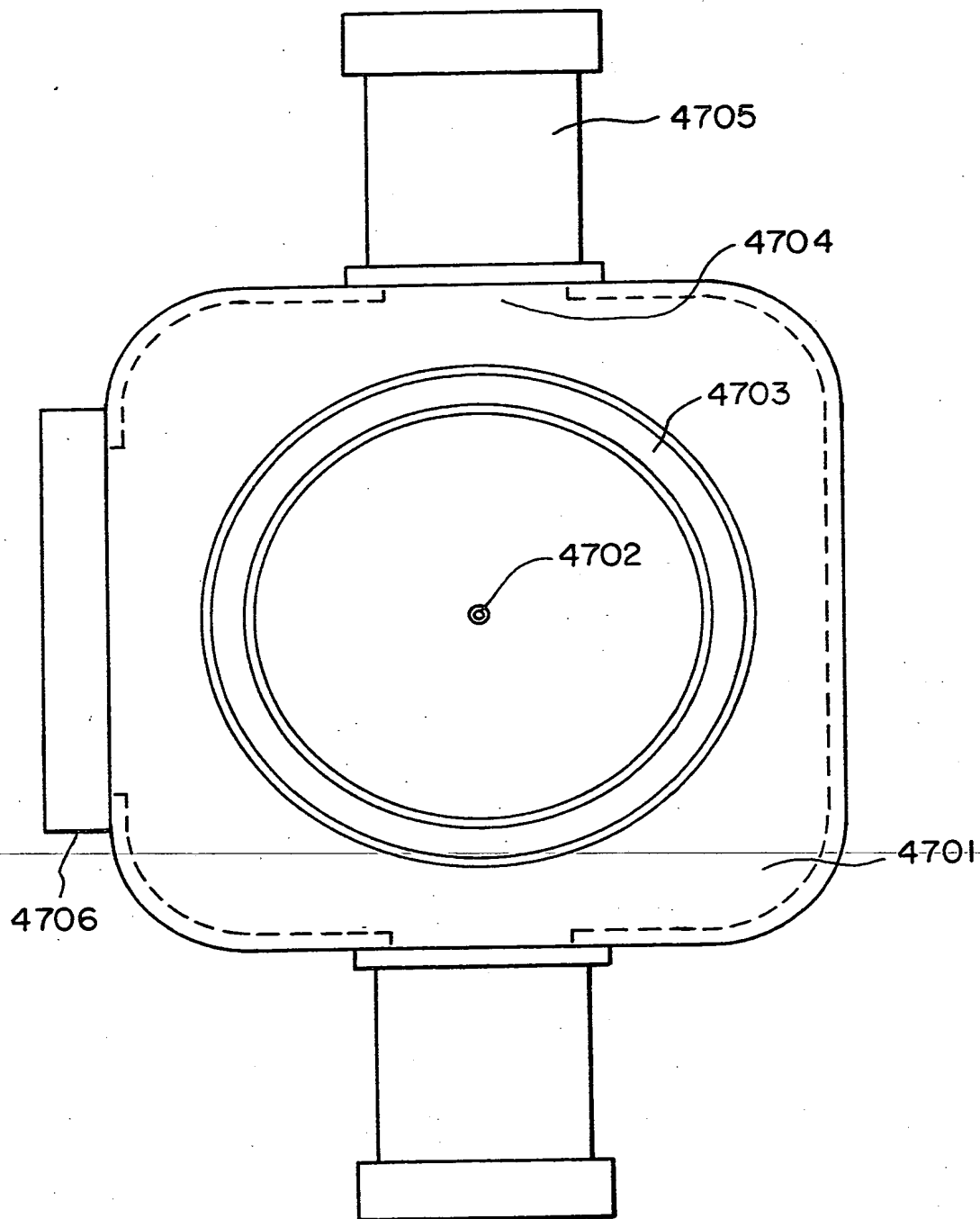


Fig. 47

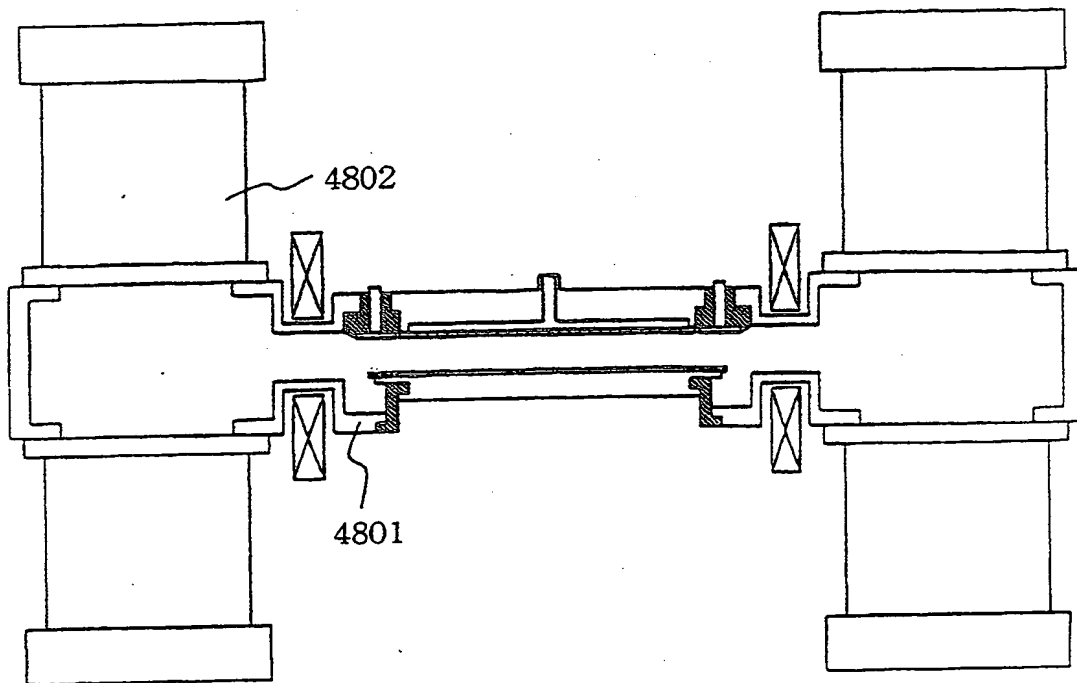


Fig. 48

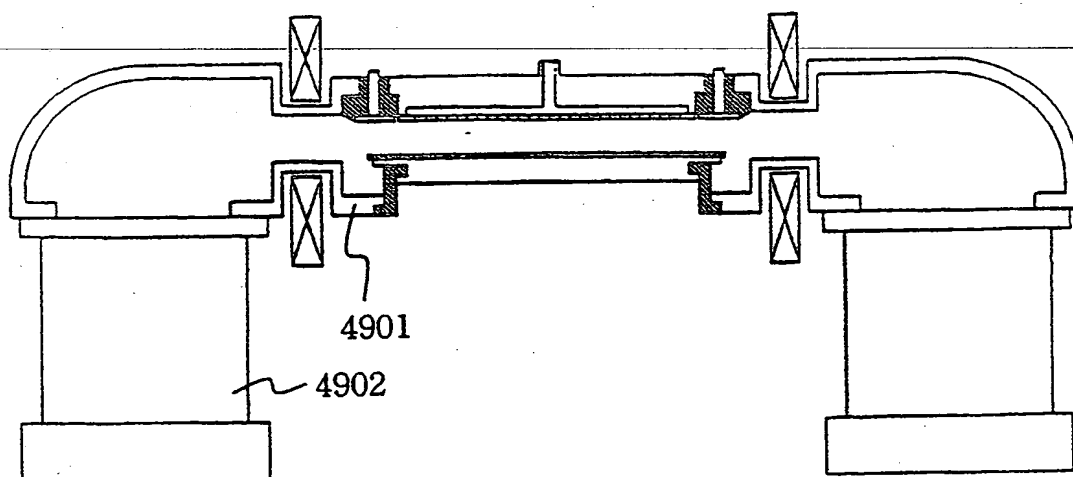


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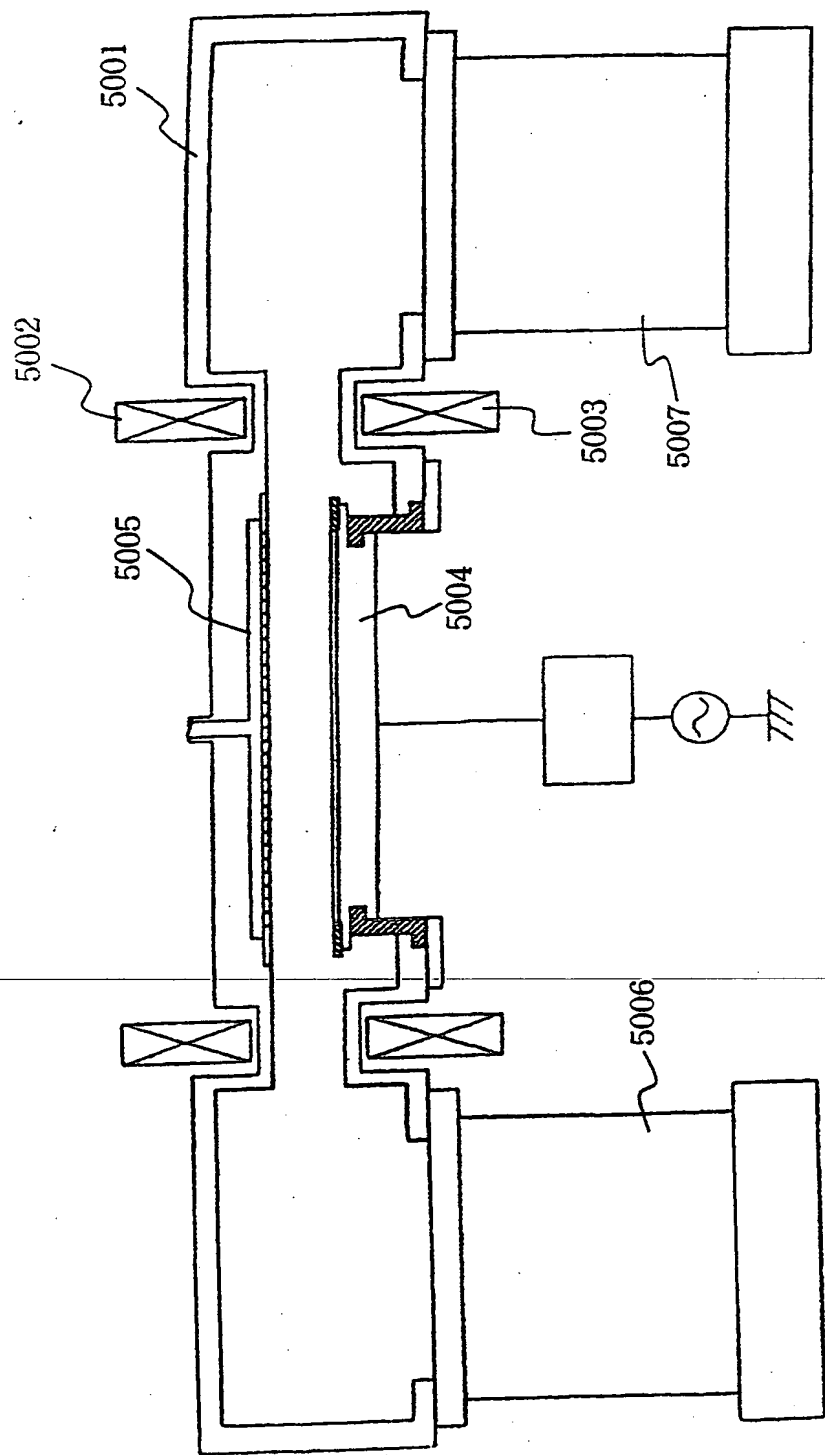


Fig. 50

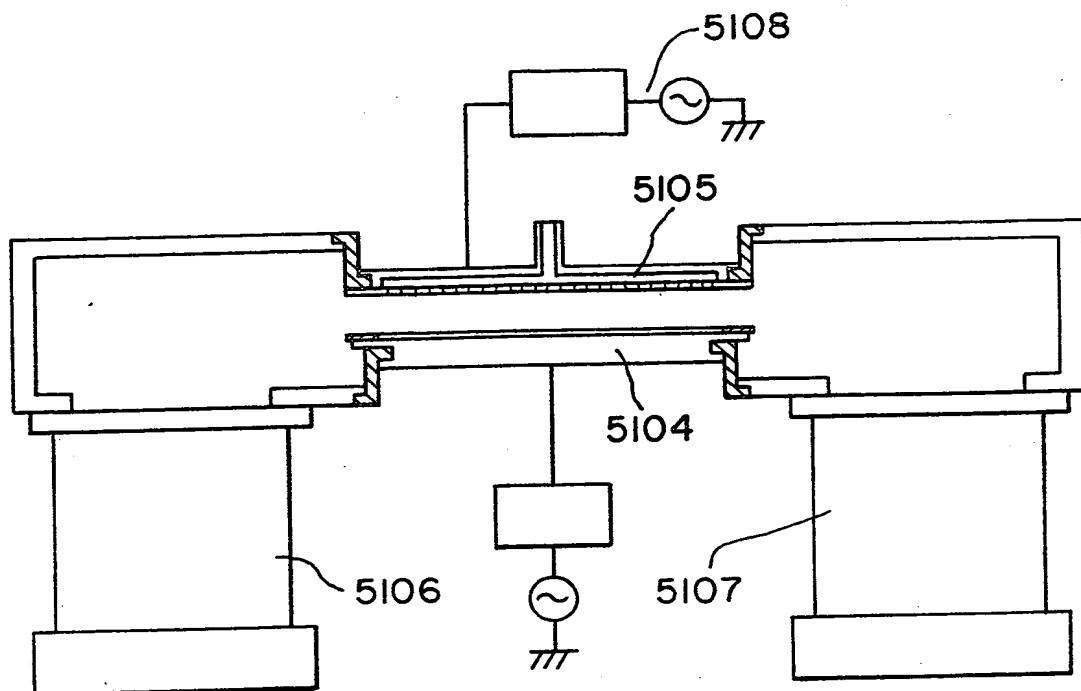


Fig. 51

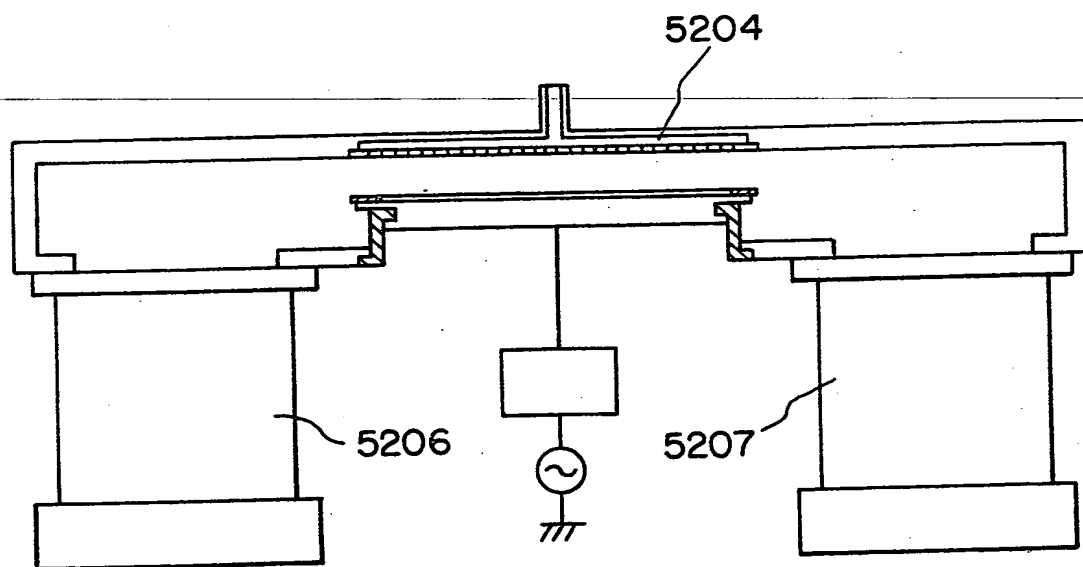


Fig. 52

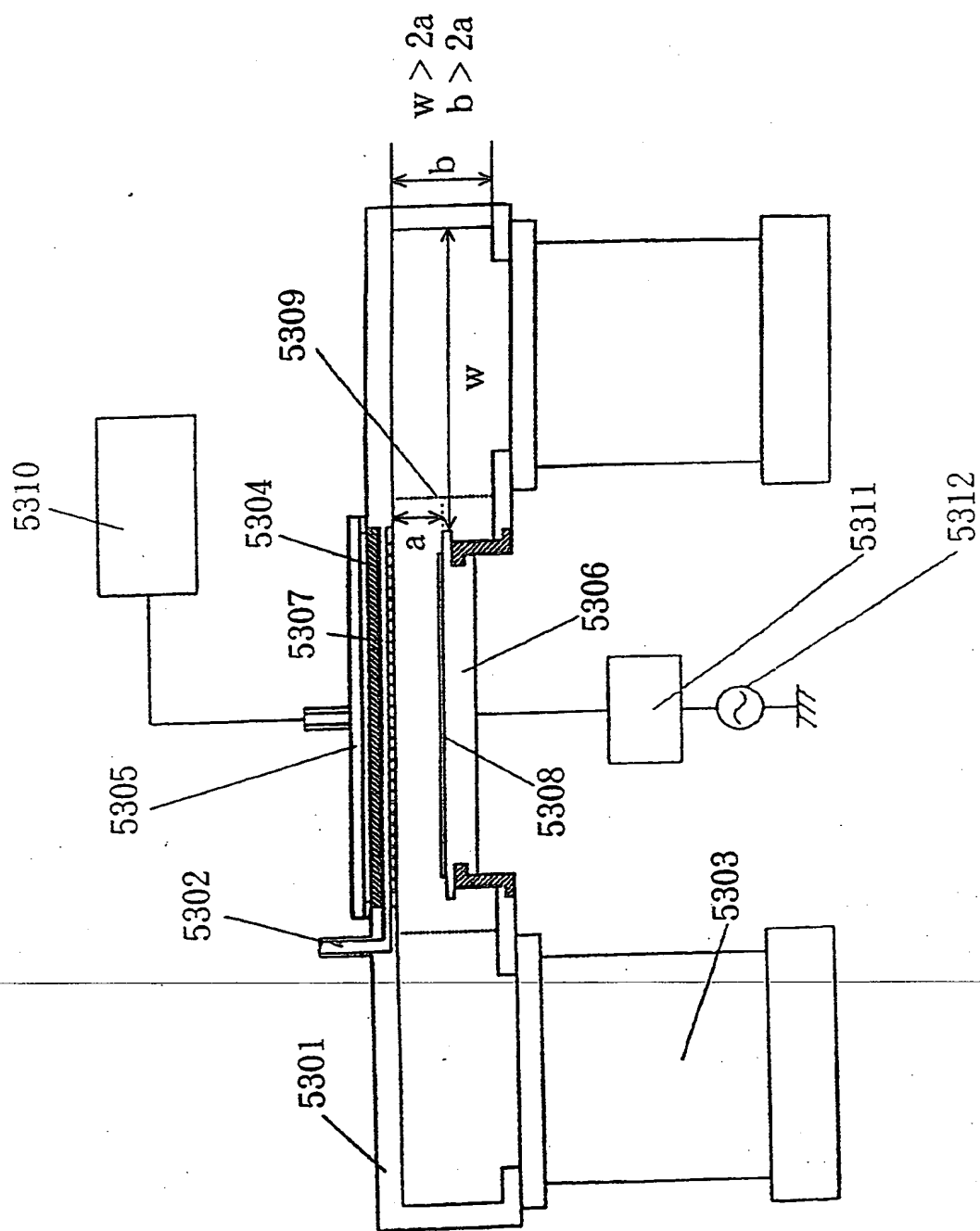


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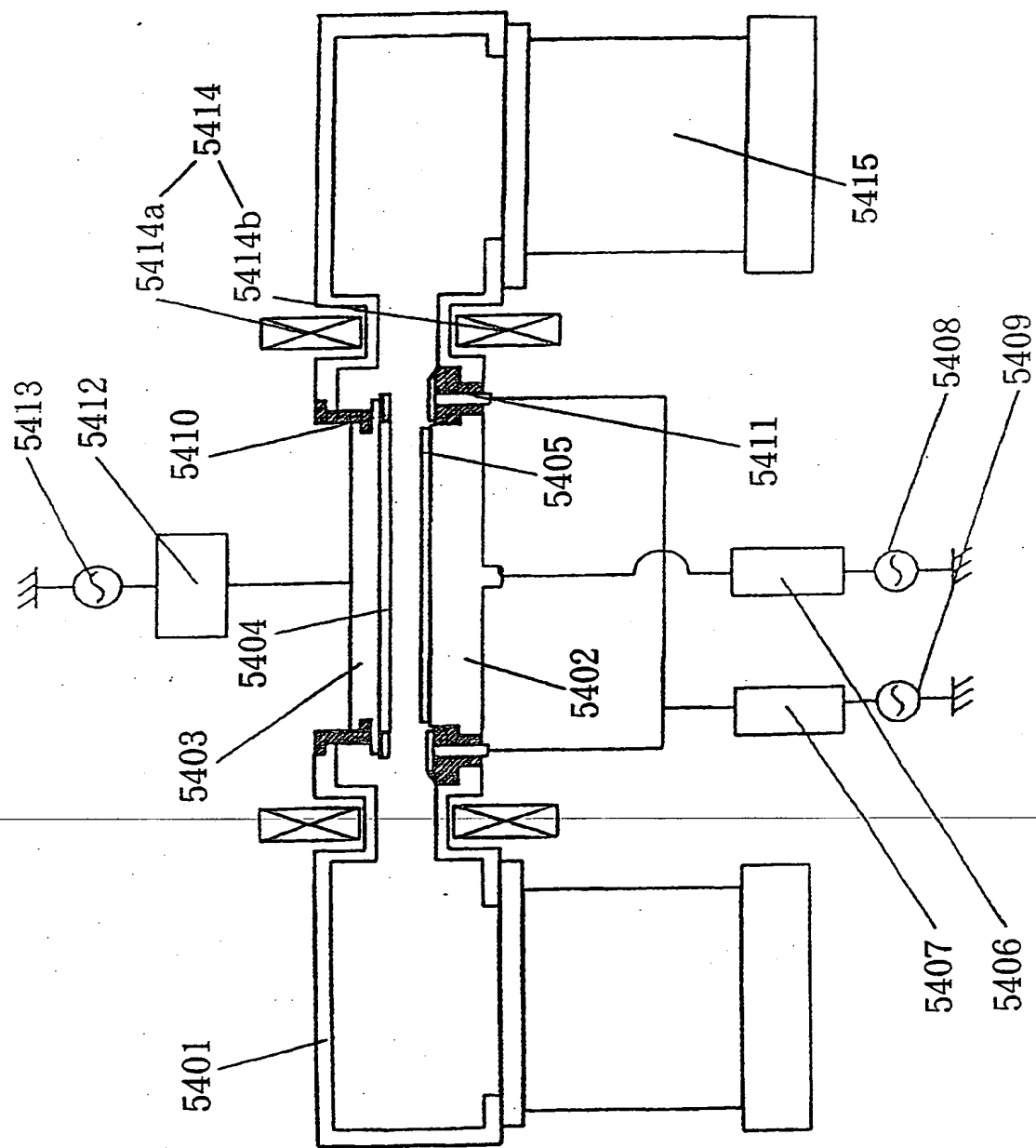


Fig. 54

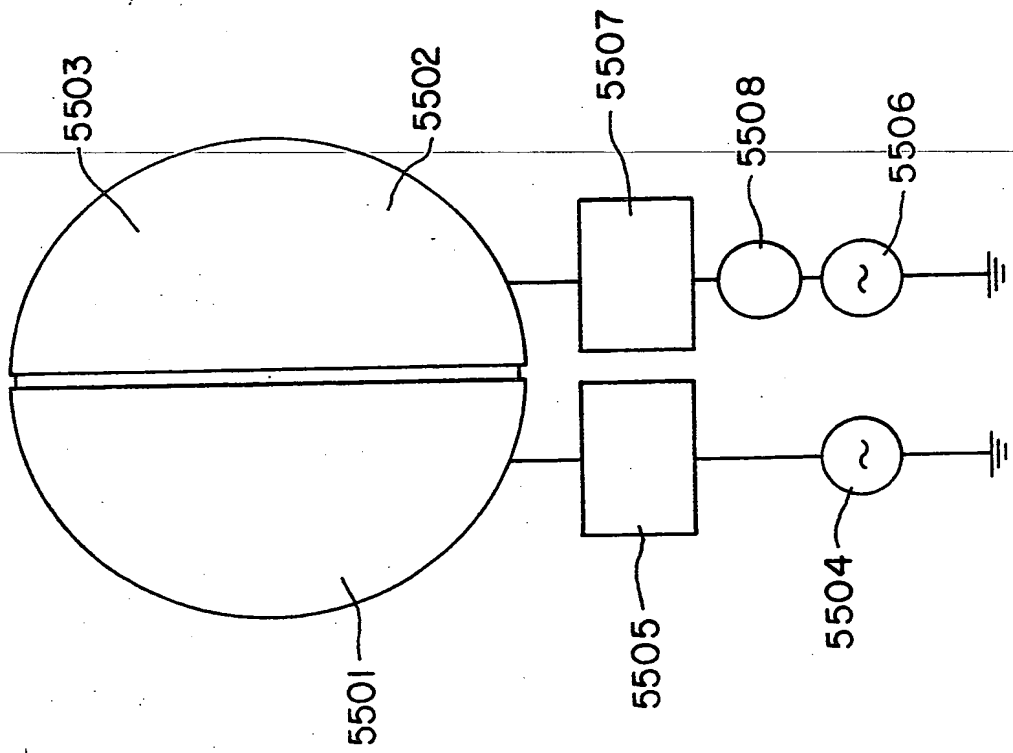


Fig. 55

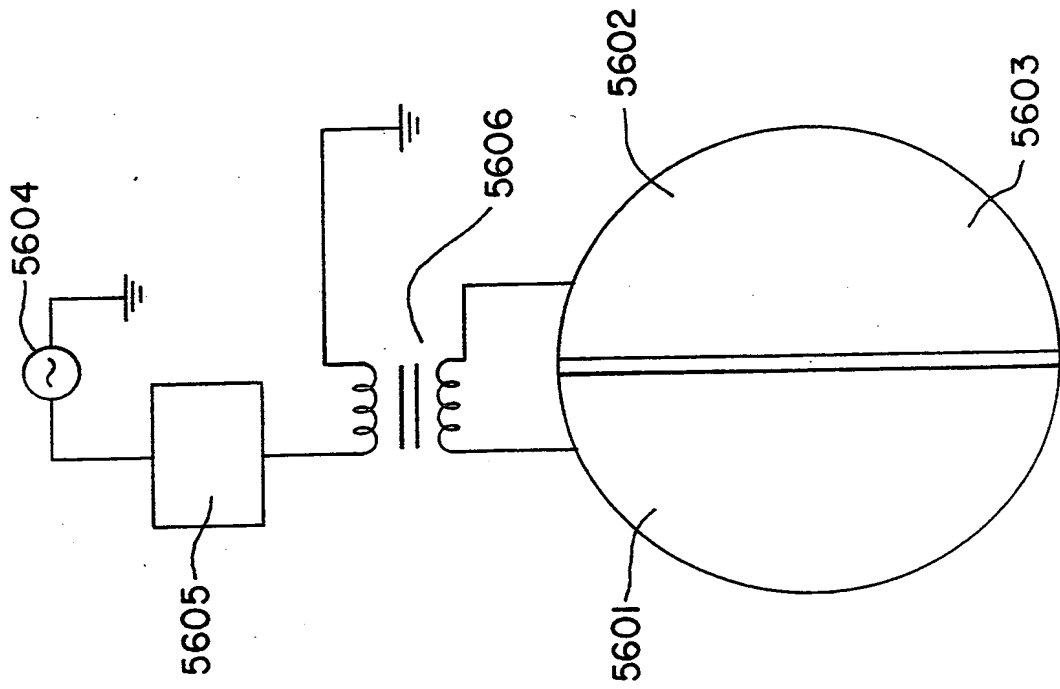


Fig. 56

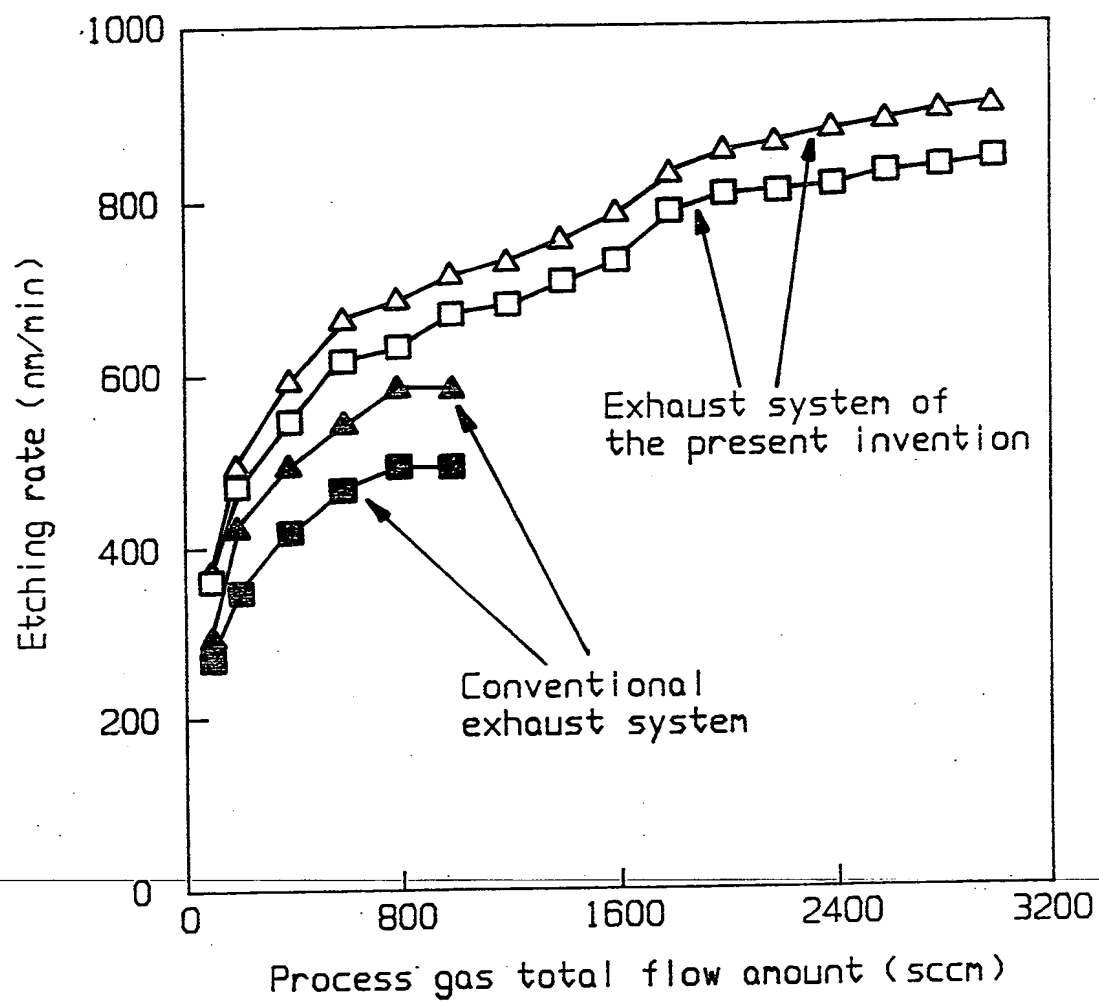


Fig. 57

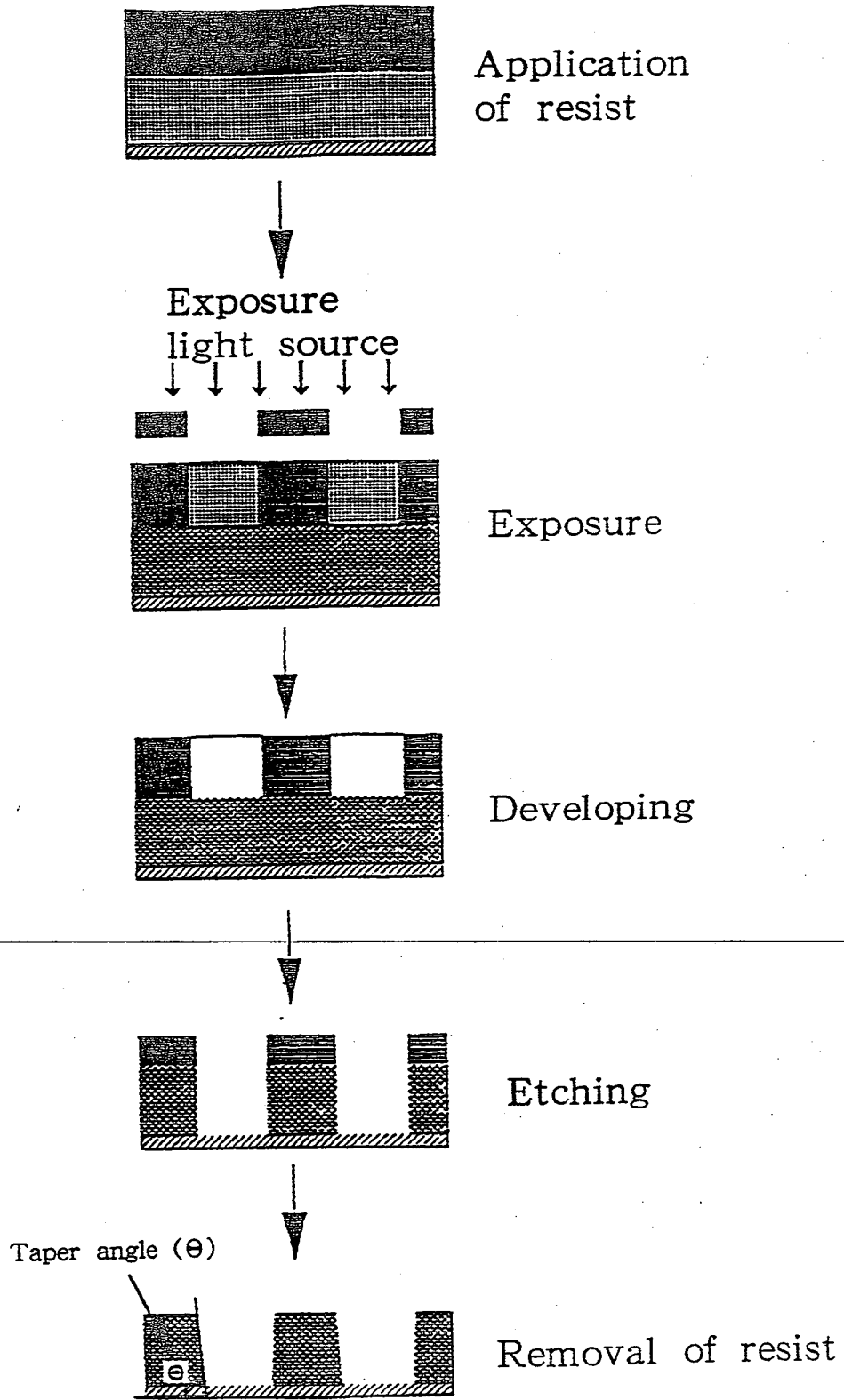


Fig. 58

Sputtering conditions : Pressure 10 (mTorr)
Ar gas flow amount 1.5 (slm)

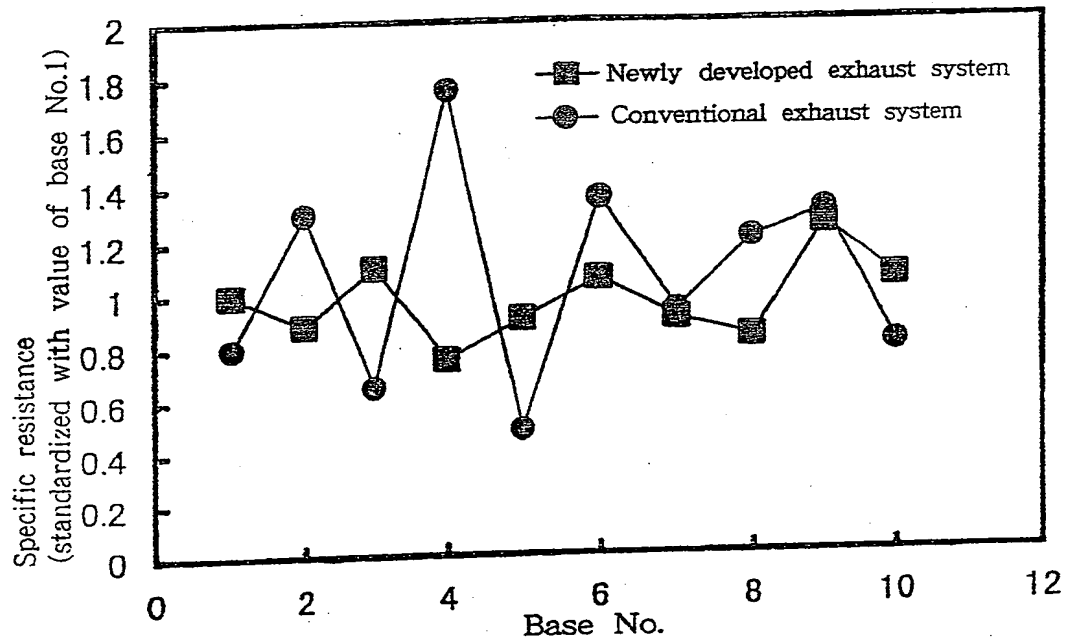


Fig. 59

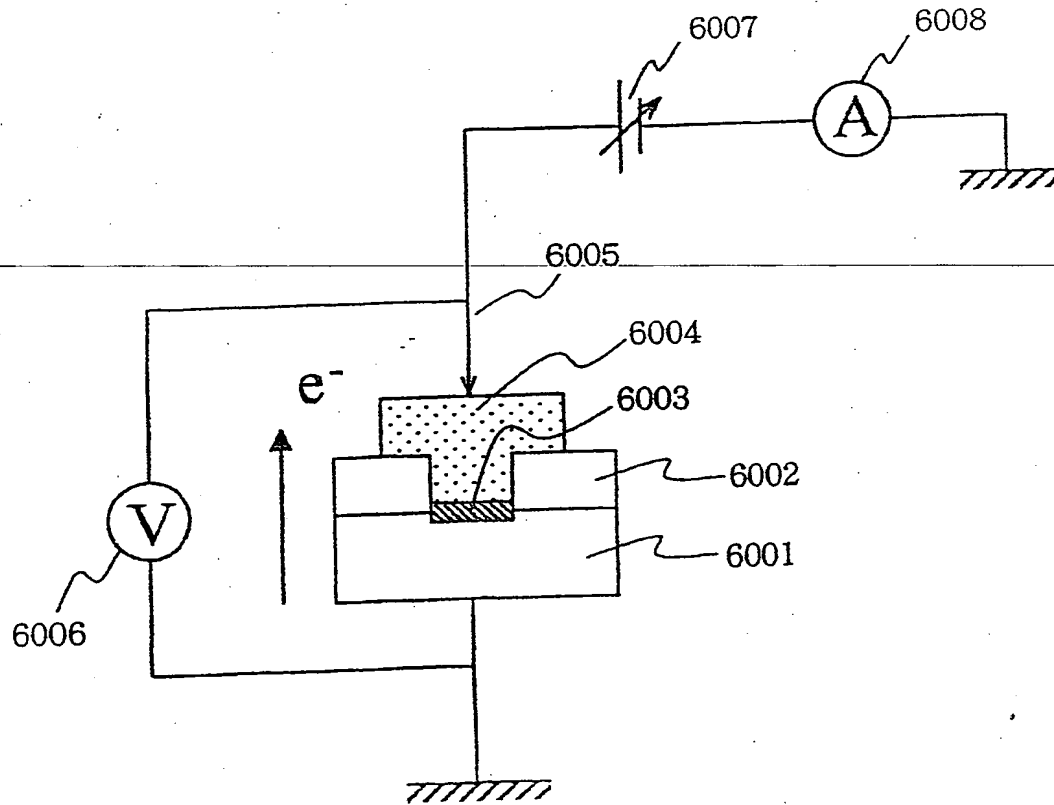


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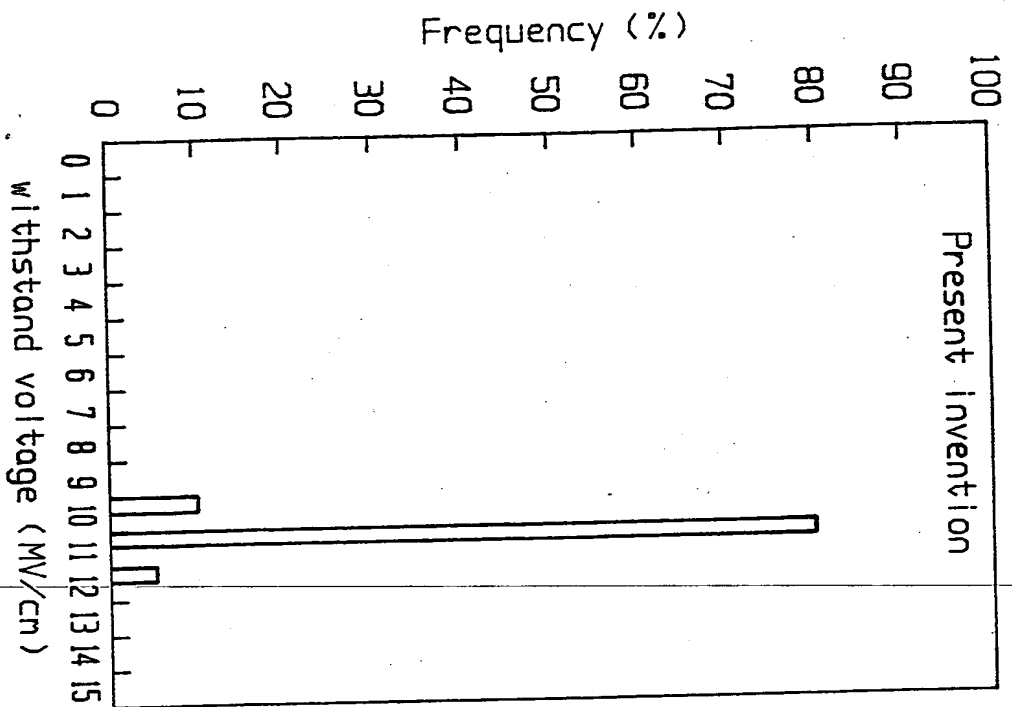


Fig. 61A

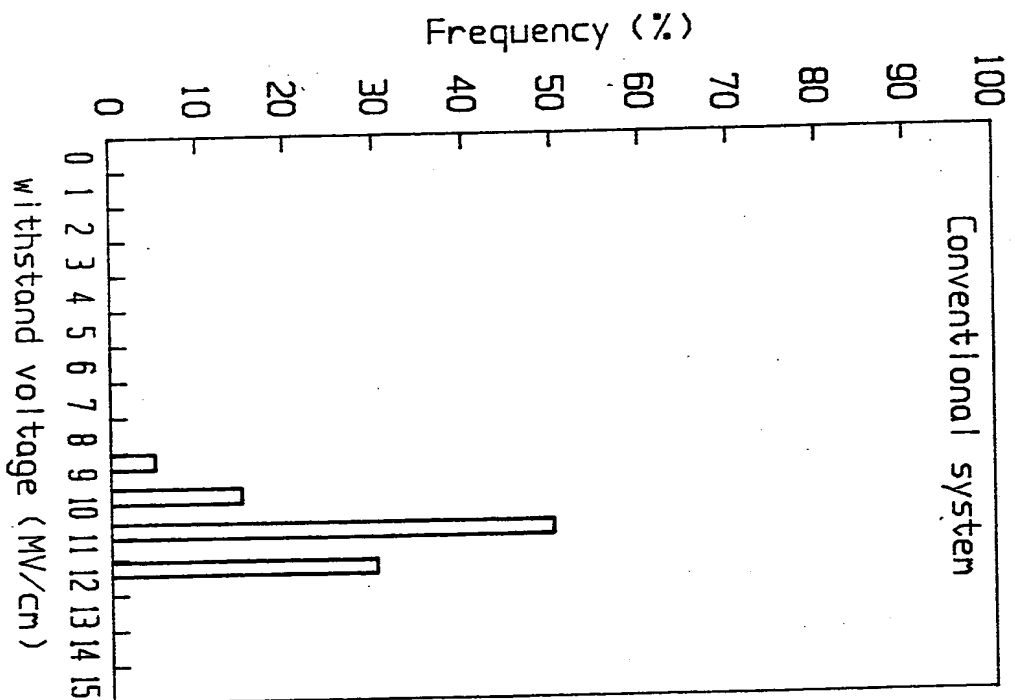


Fig. 61B

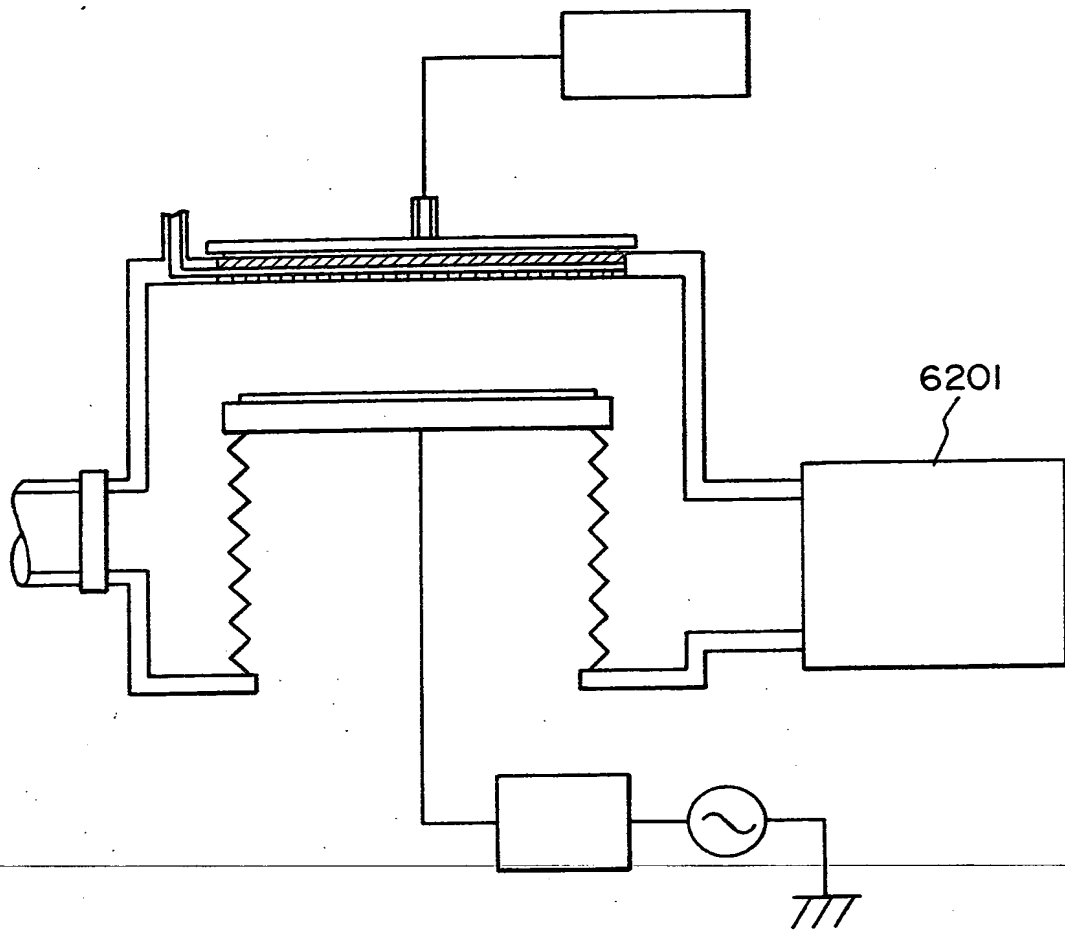


Fig. 62

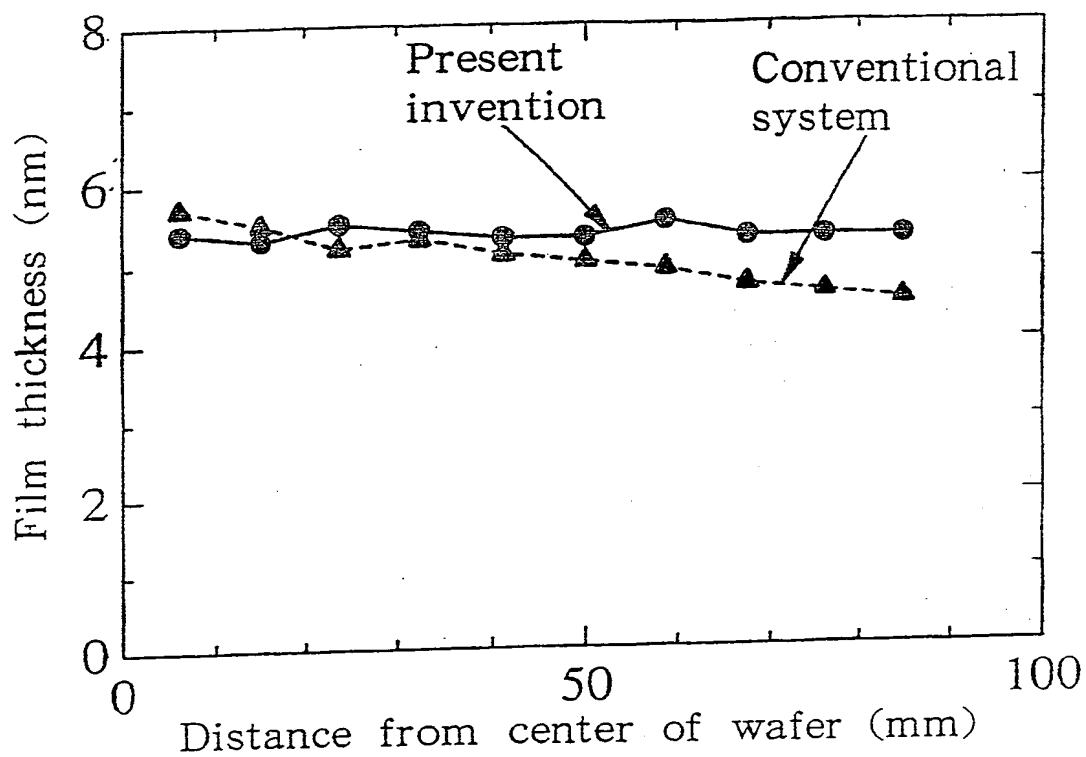


Fig. 63

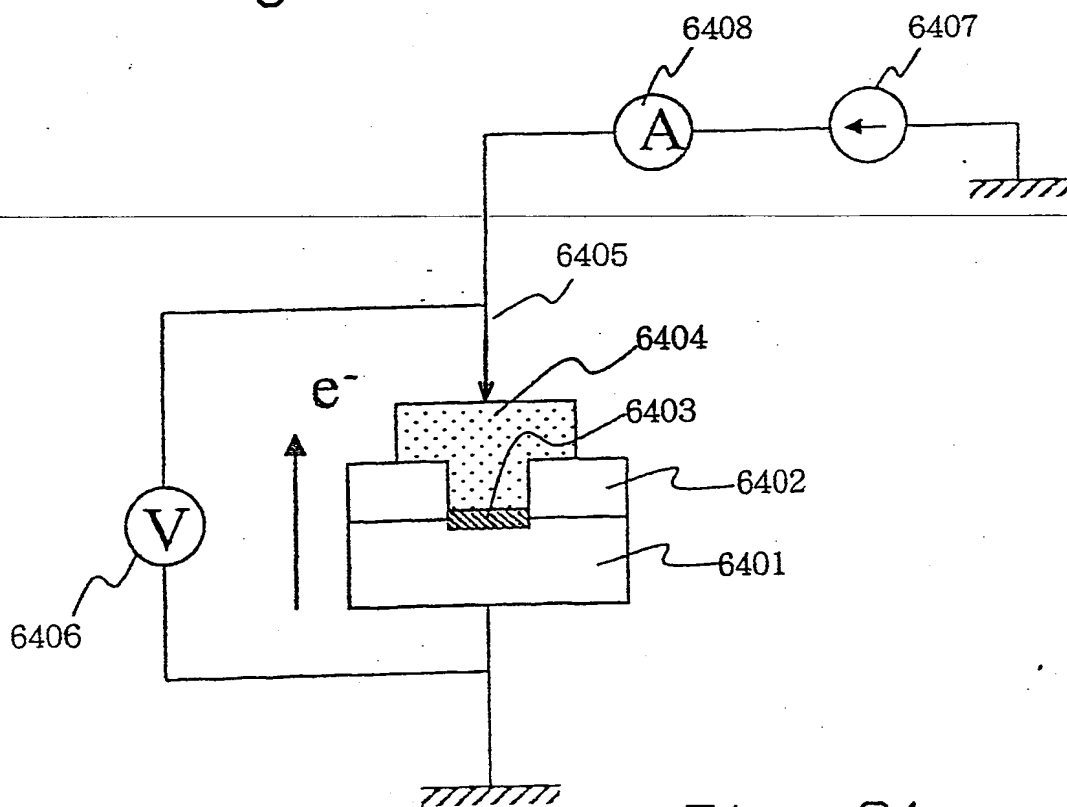


Fig. 64

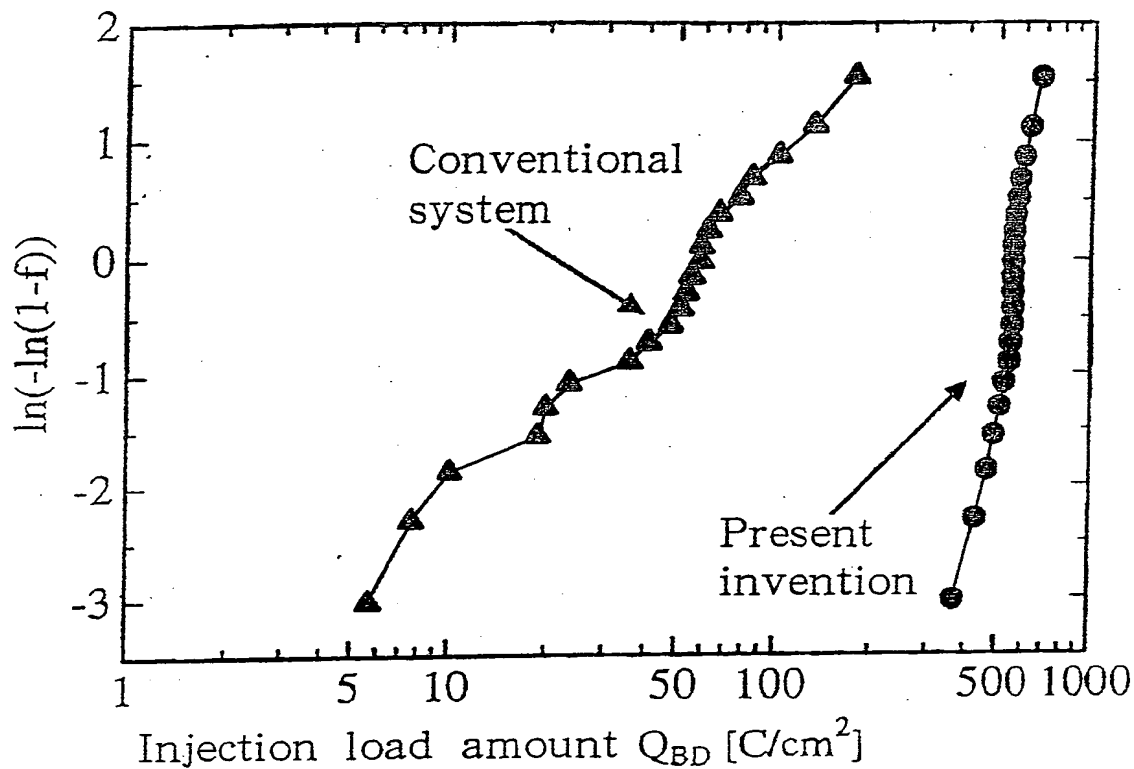


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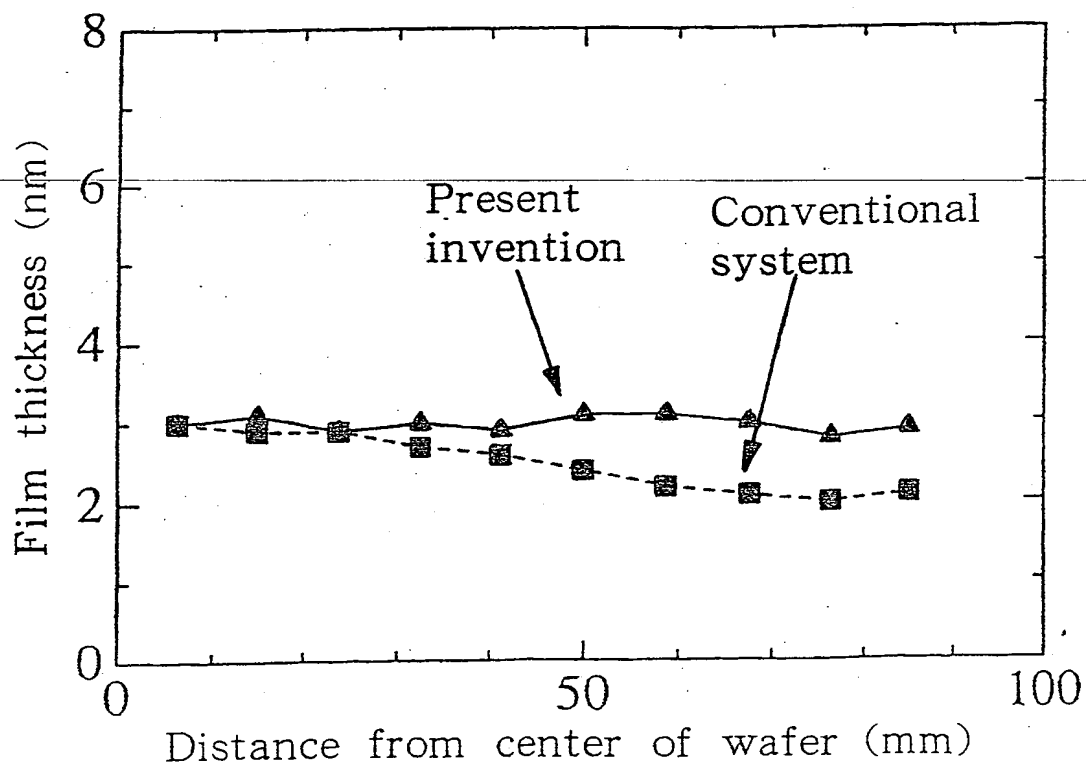


Fig. 66

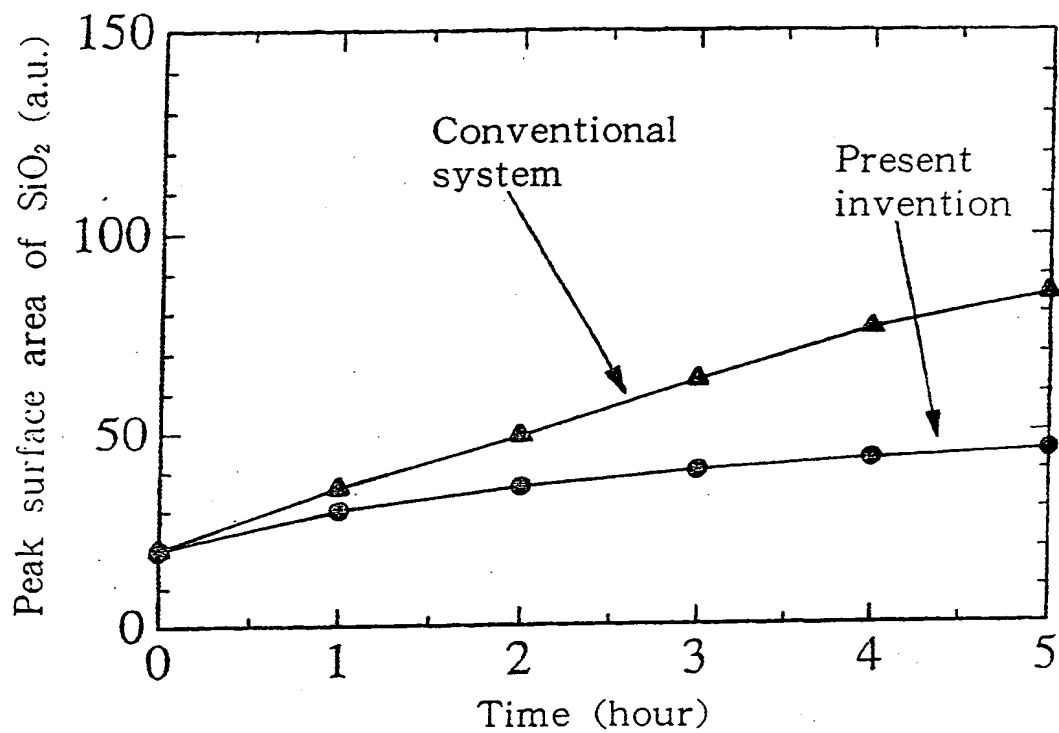


Fig. 67

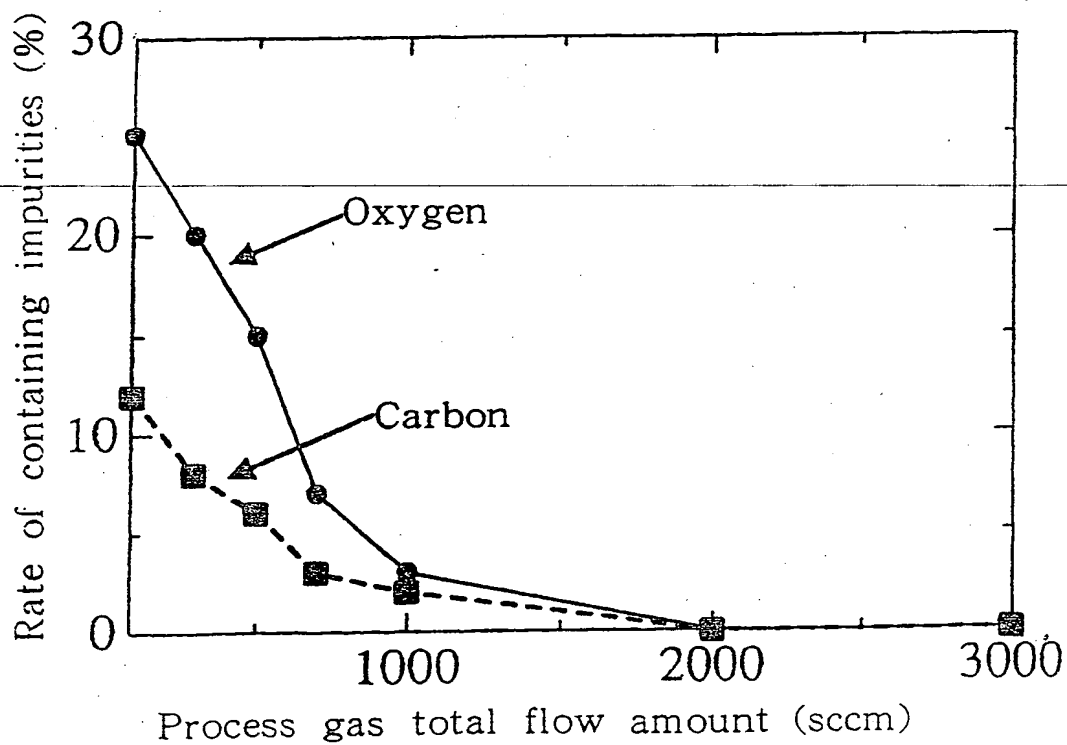


Fig. 68

Mask for X ray lithography

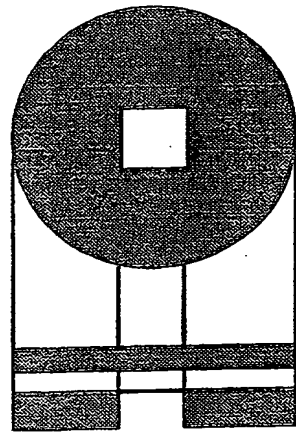


Fig. 69

- ← Absorber (Ta_4B)
- ← Support (diamond)
- ← Base plate (silicon)

Permeability measurement system

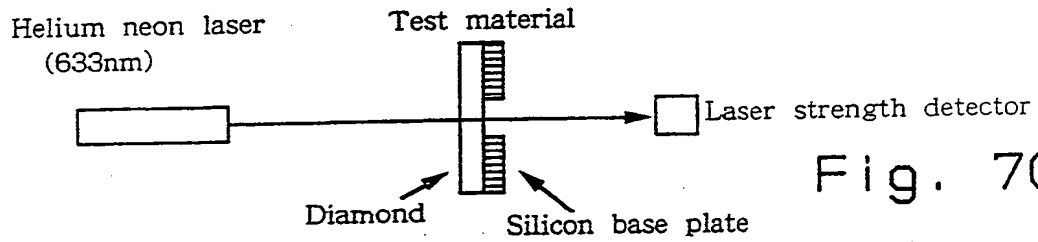


Fig. 70

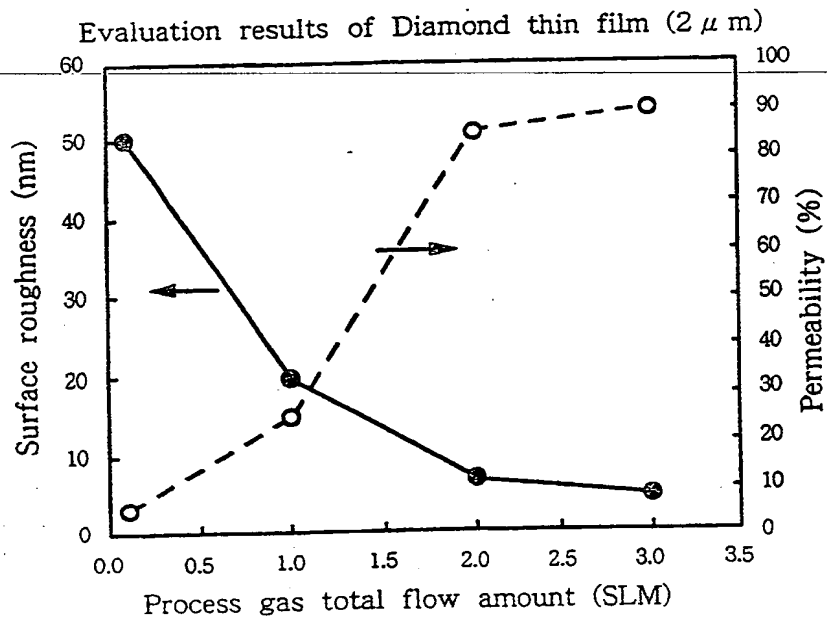


Fig. 71

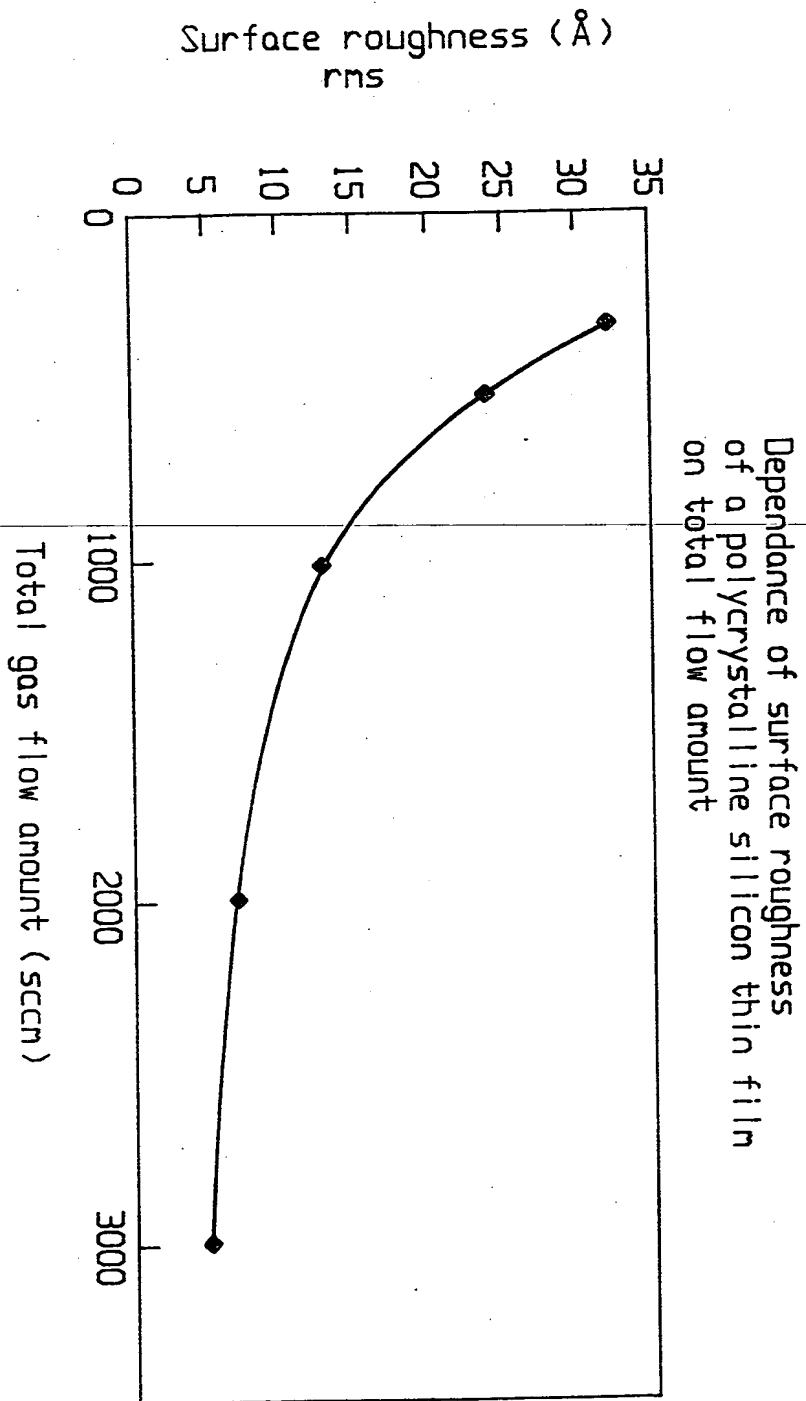


Fig. 72

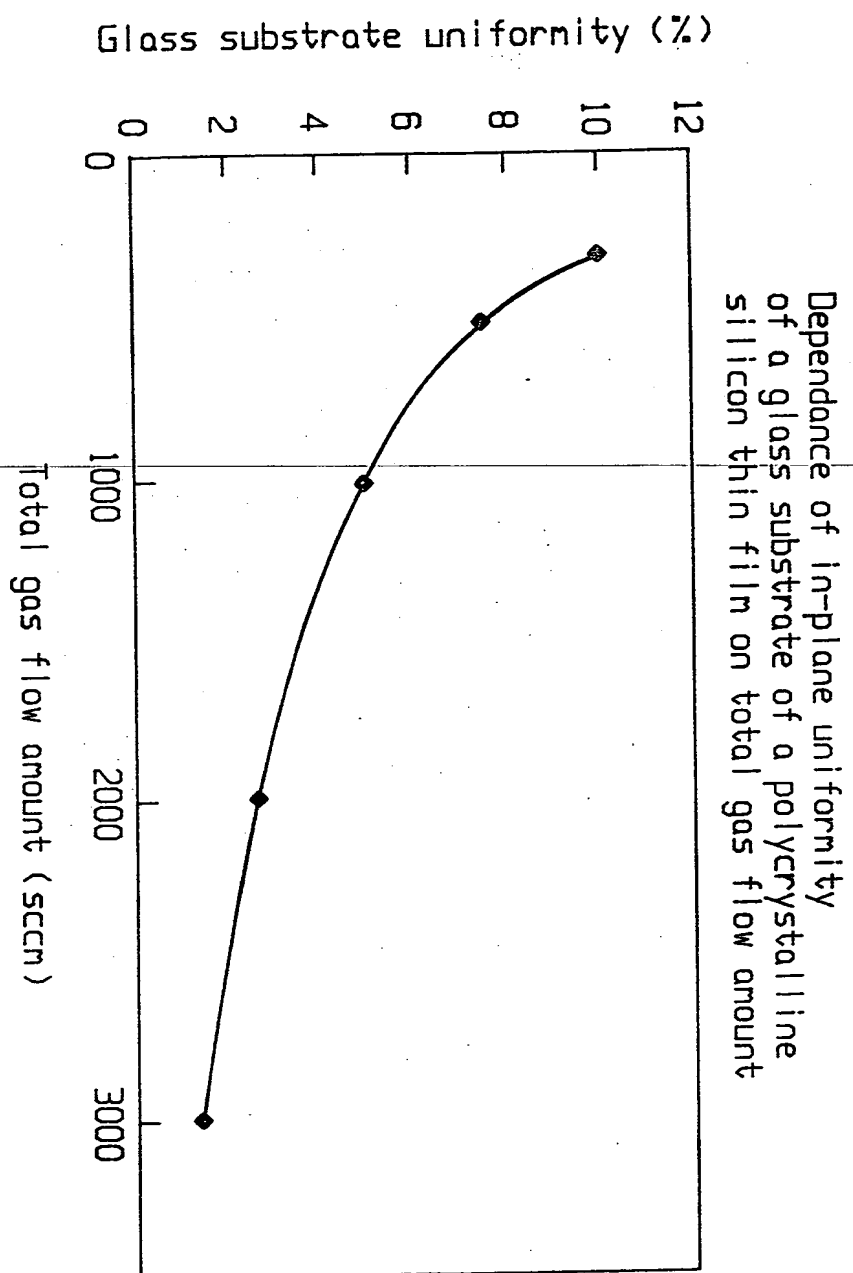


Fig. 73

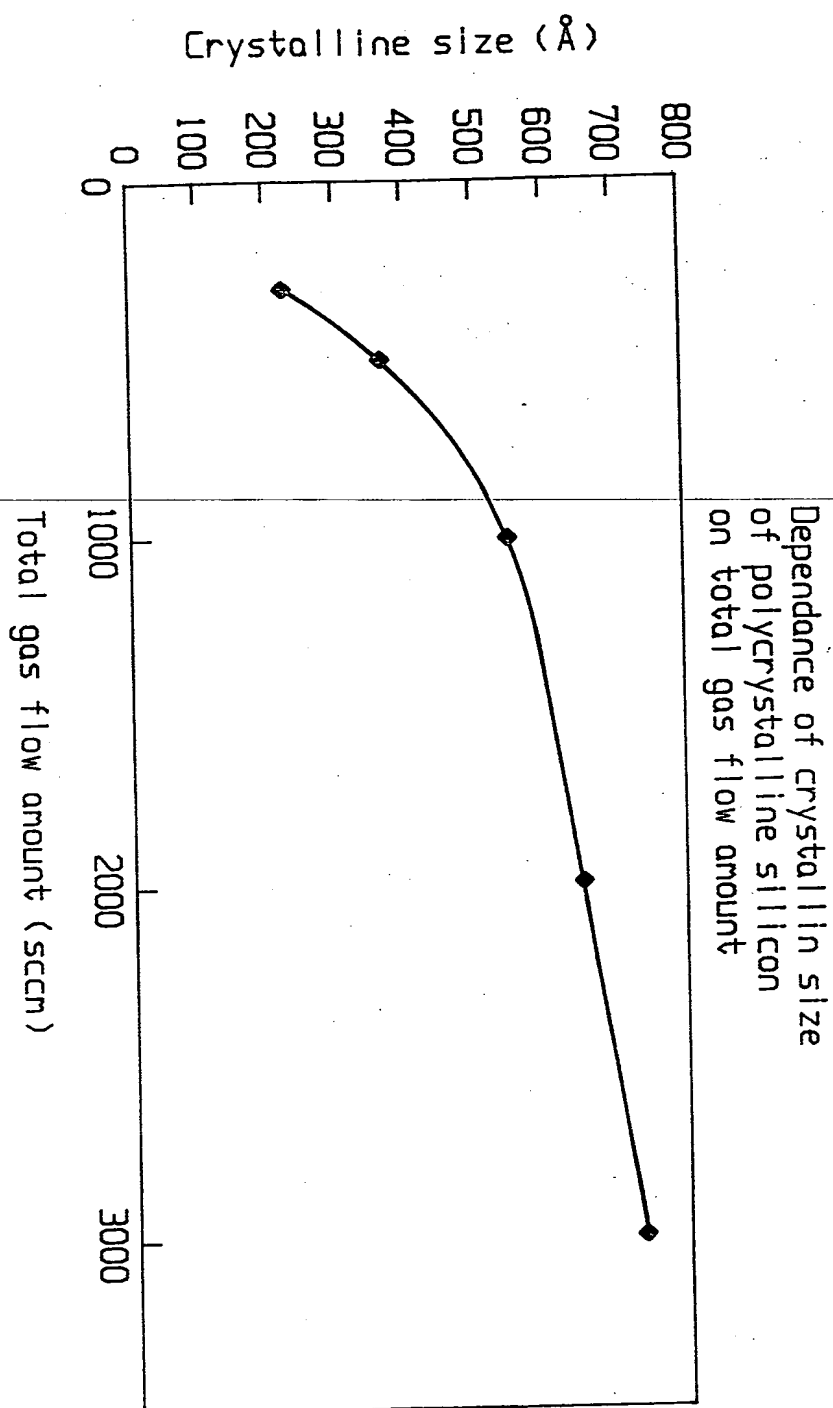


Fig. 74

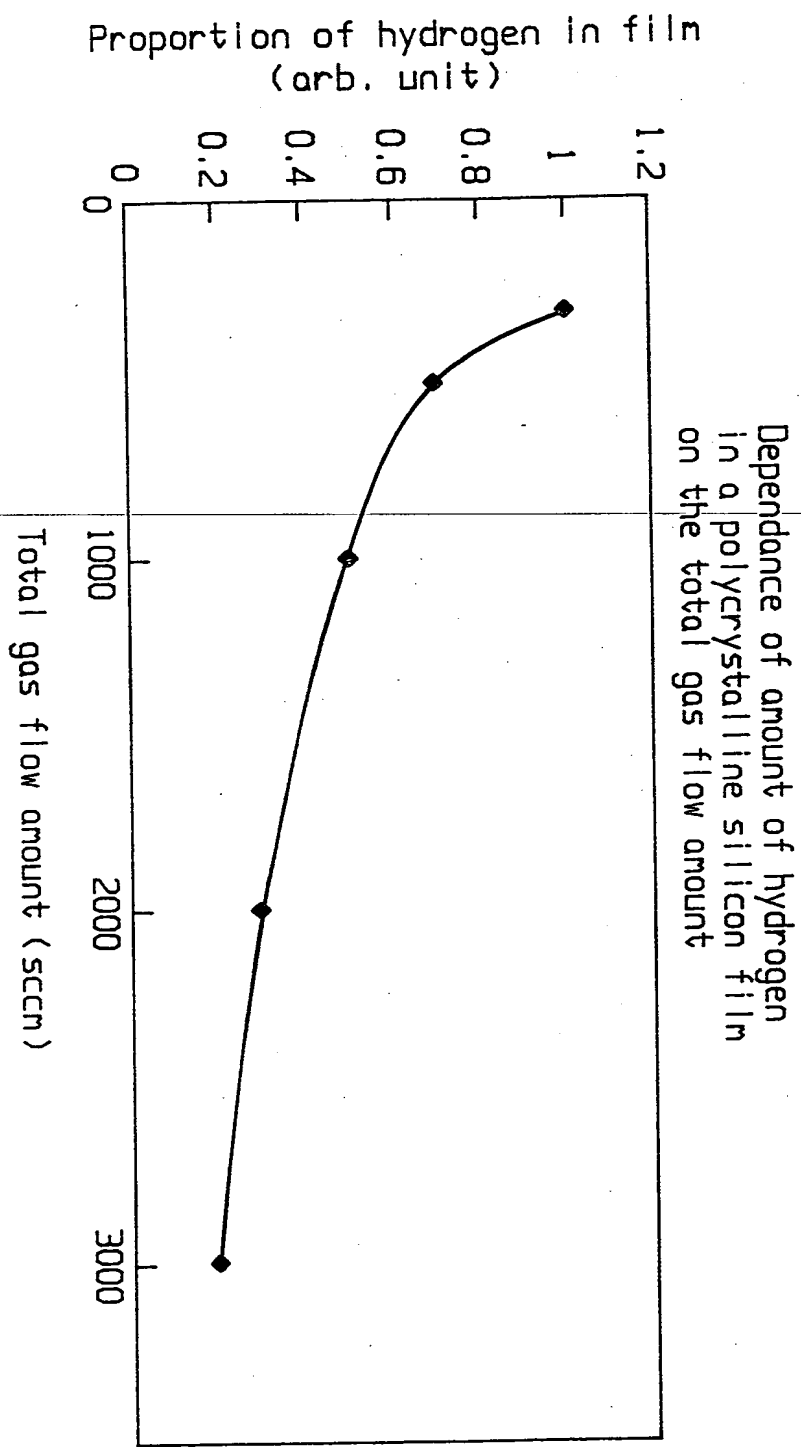


Fig. 75

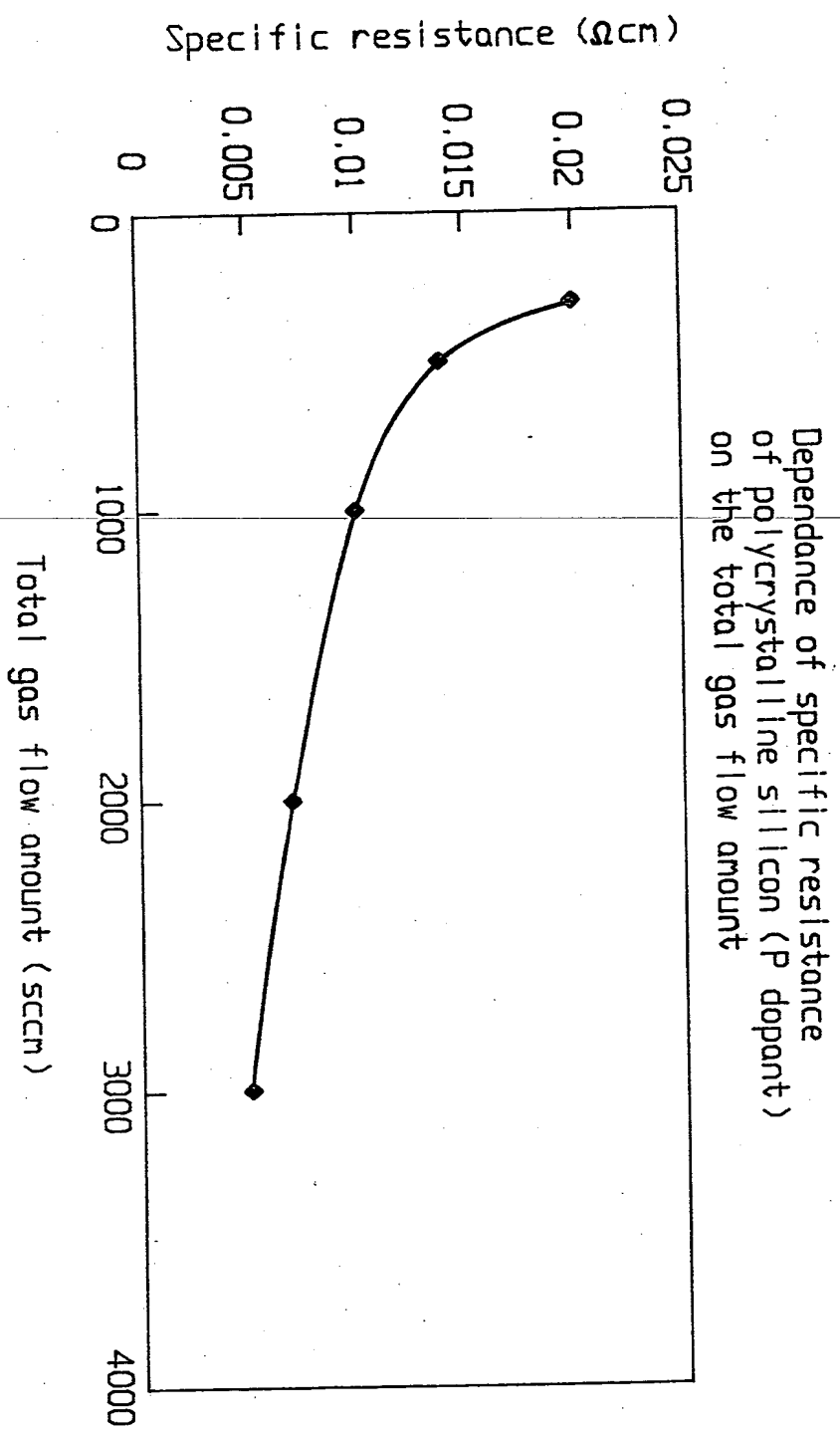


Fig. 76

Dependence of In-plane uniformity
of a SiN_x film on the total flow amount

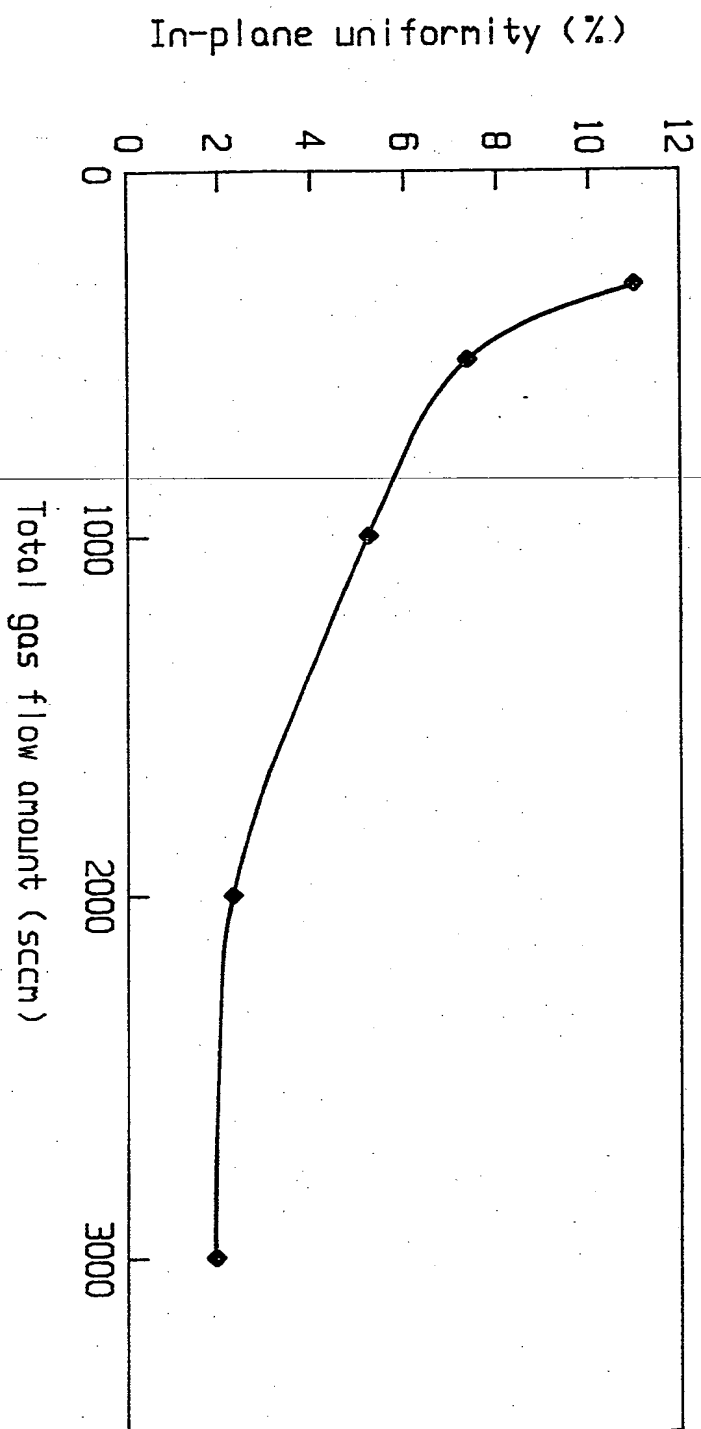


Fig. 77

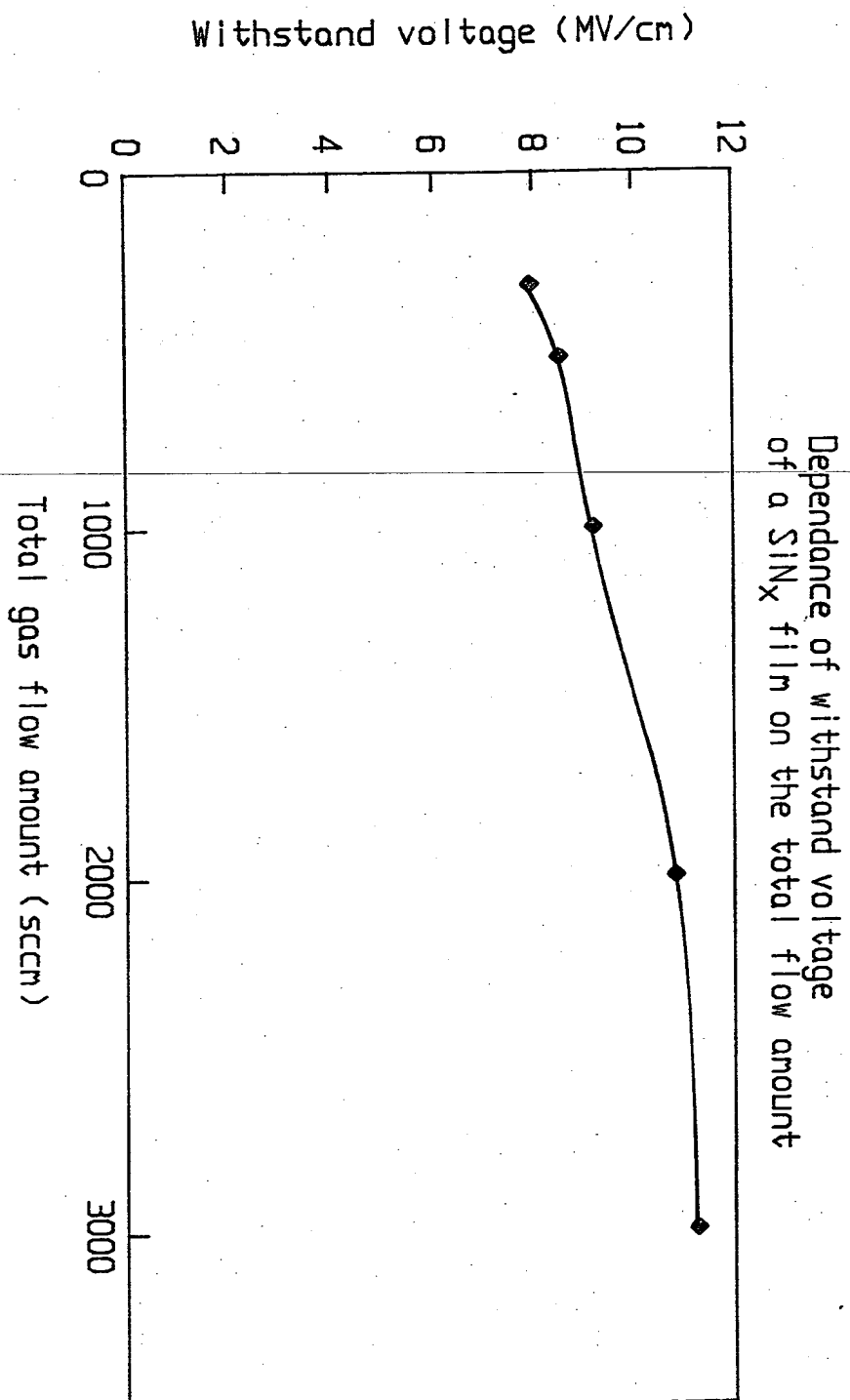


Fig. 78

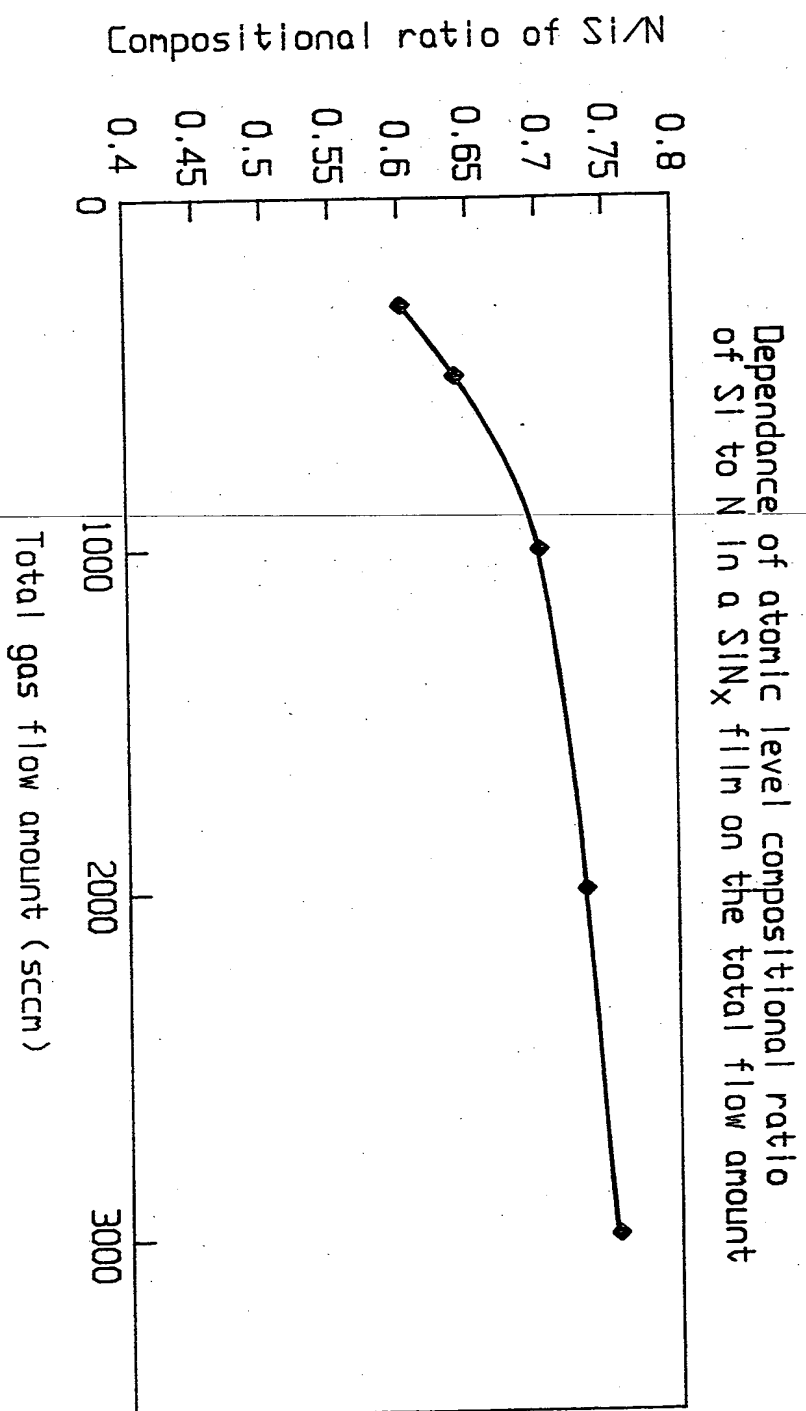


Fig. 79

Dependence of the deposition rate
of a fluorocarbon film on total gas
flow amount

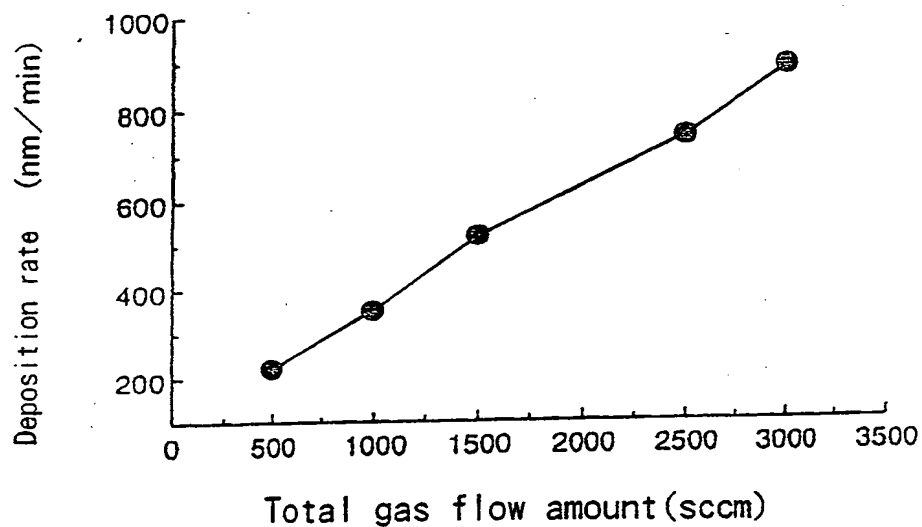


Fig. 80

Dependence of in-plane uniformity
of the deposition rate of a fluorocarbon film
on total gas flow amount on wafer

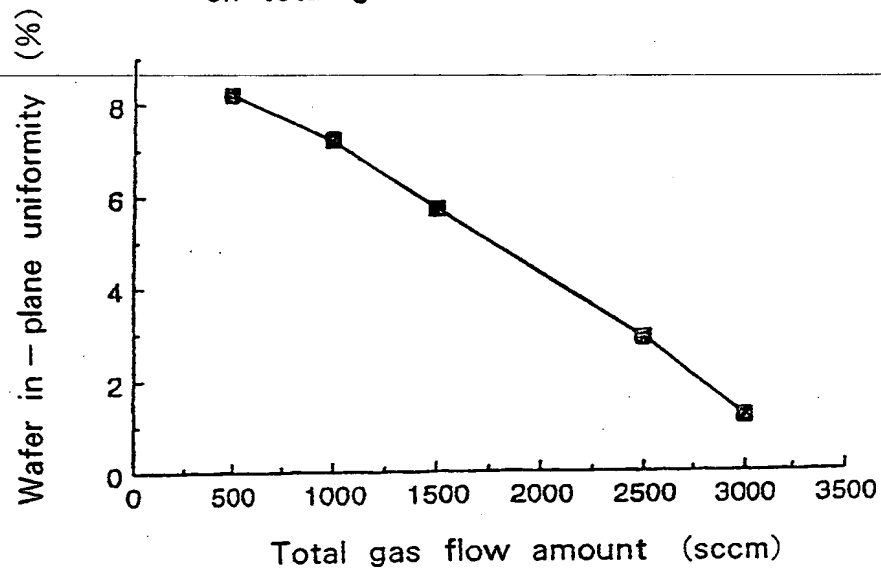


Fig. 81

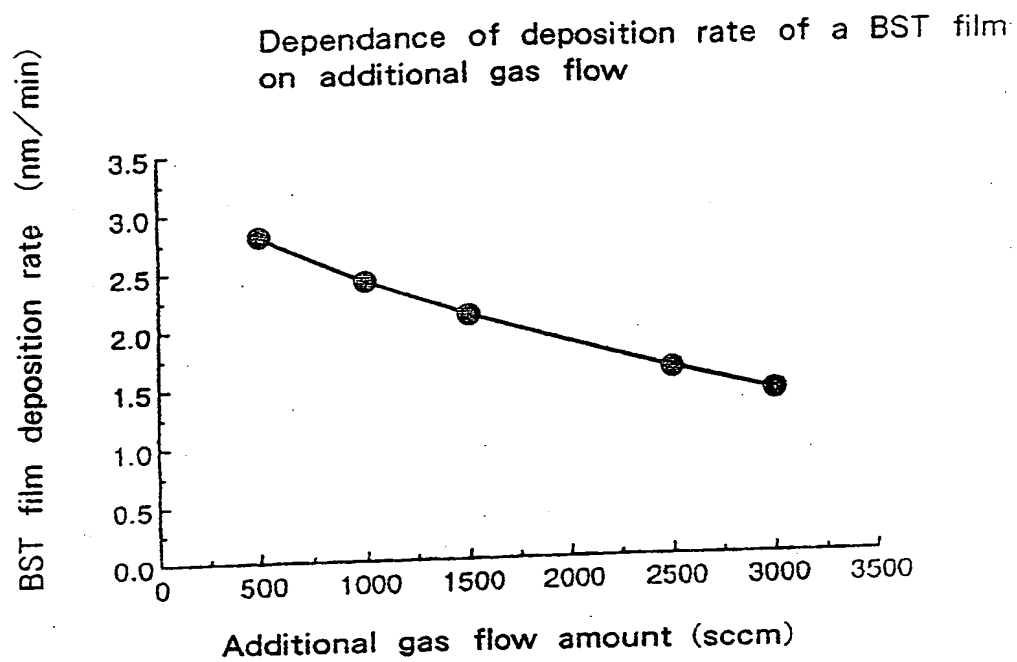


Fig. 82

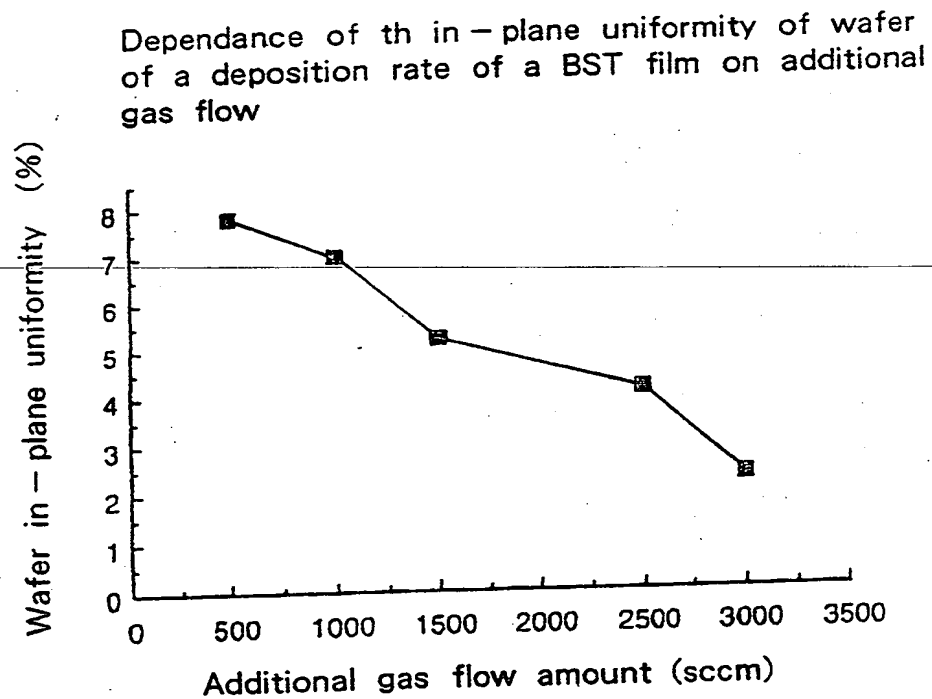


Fig. 83

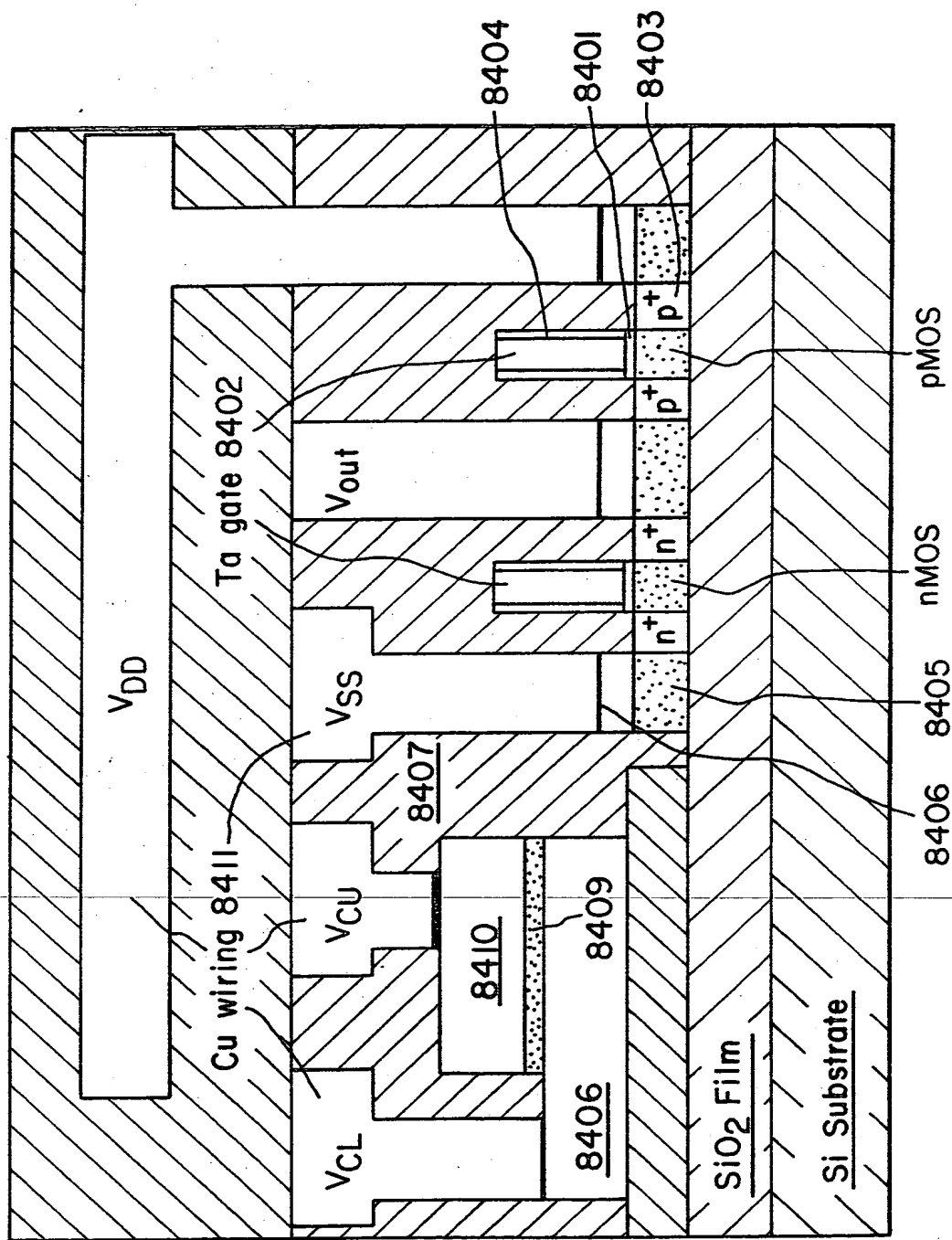
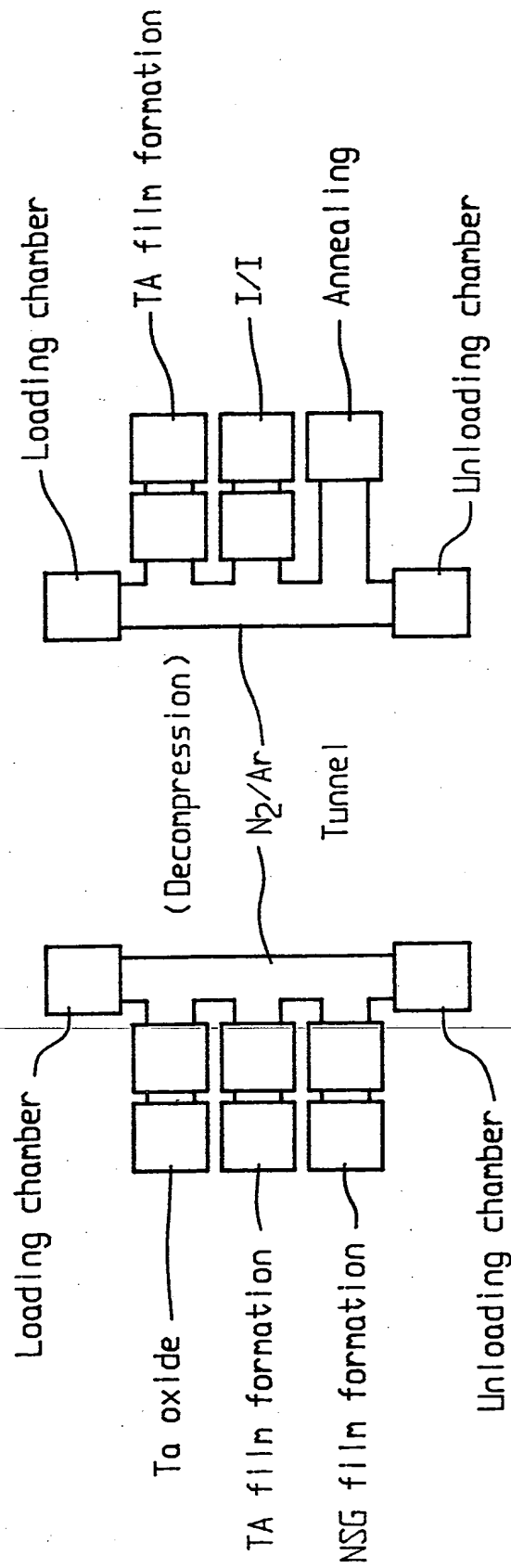


Fig. 84



Insulating film formation 6101

Fig. 85A

Tantalum silicide formation

Fig. 85B

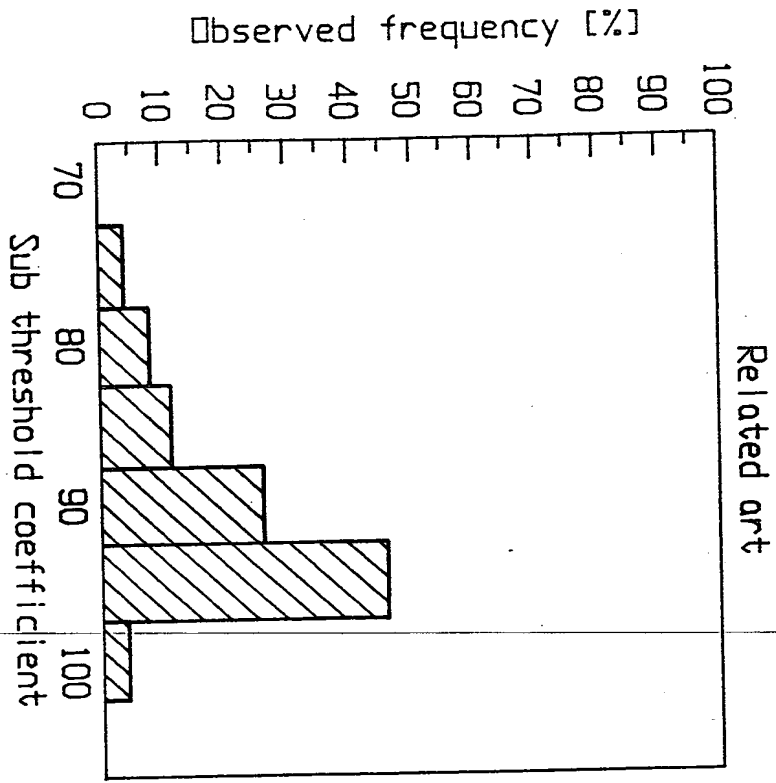


Fig. 86A

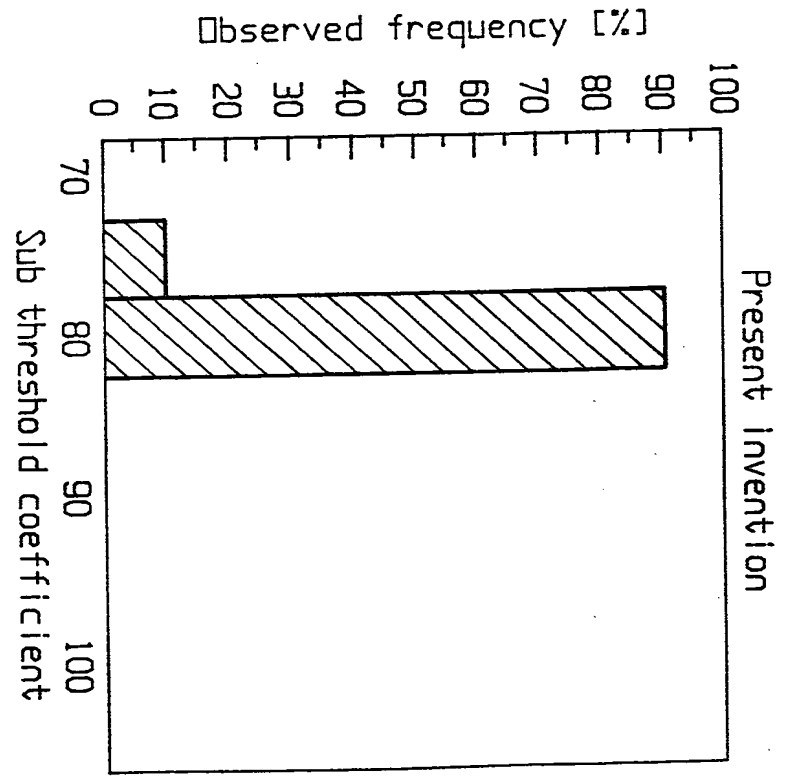


Fig. 86B

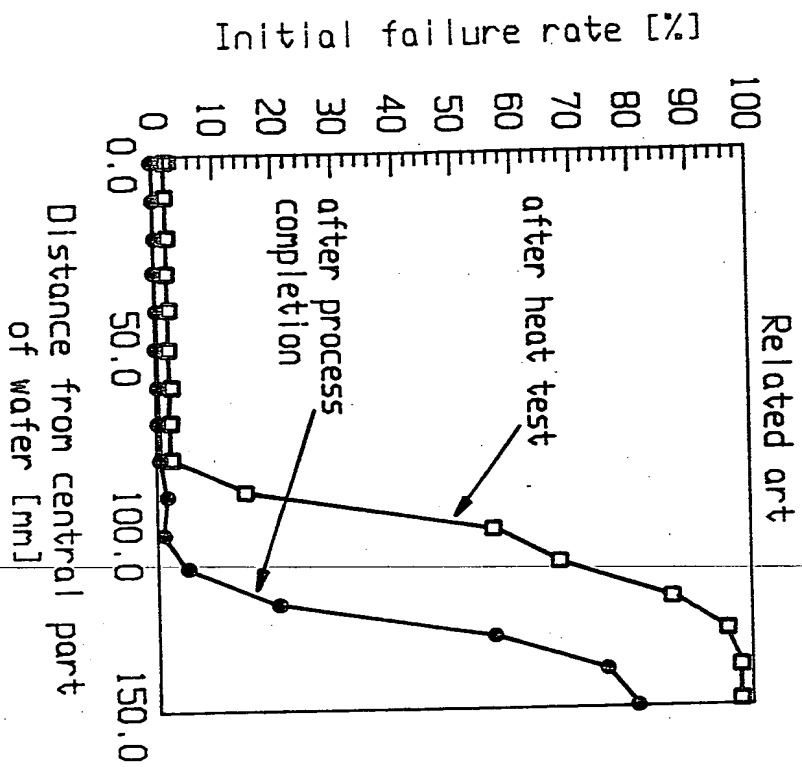


Fig. 87A

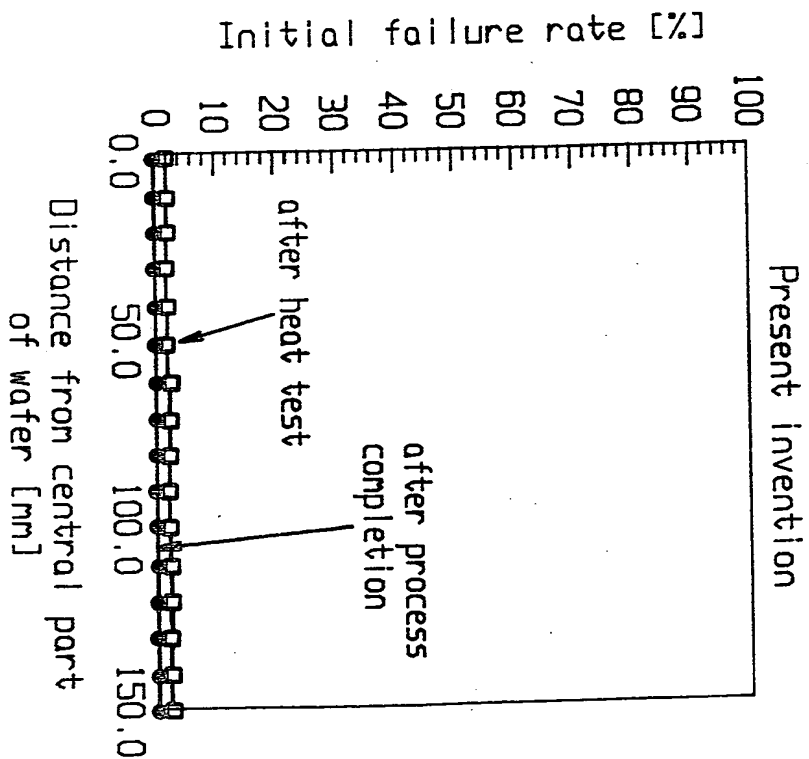


Fig. 87B

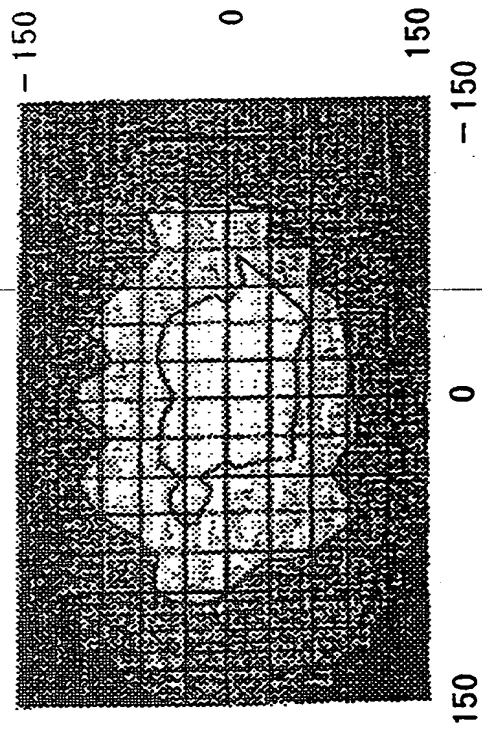


Fig. 88A Related art

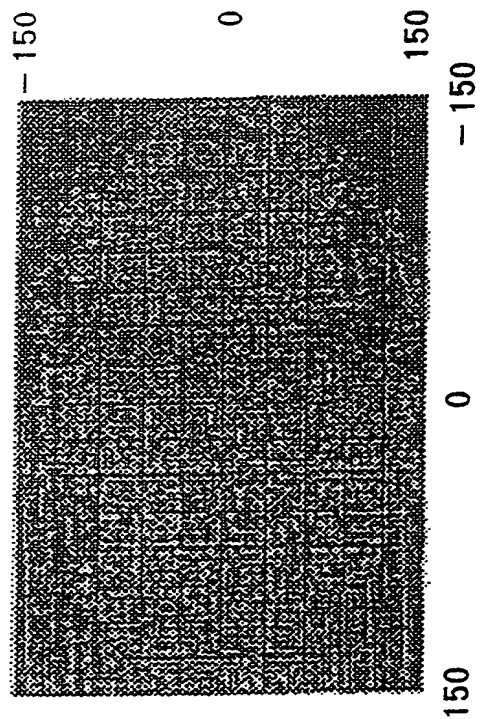
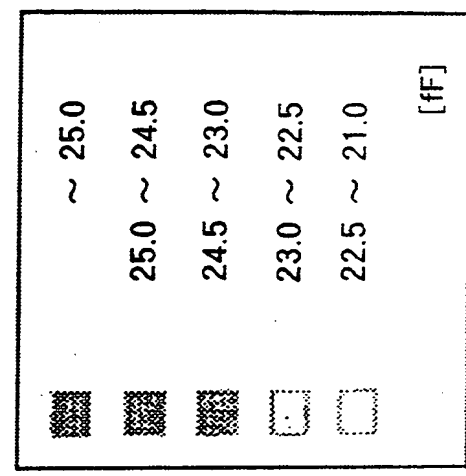
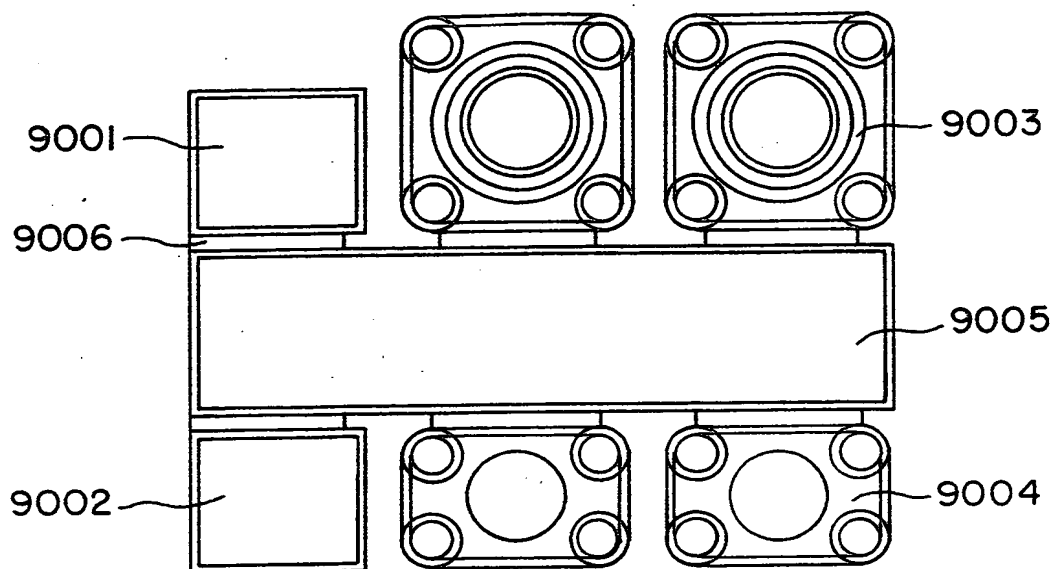


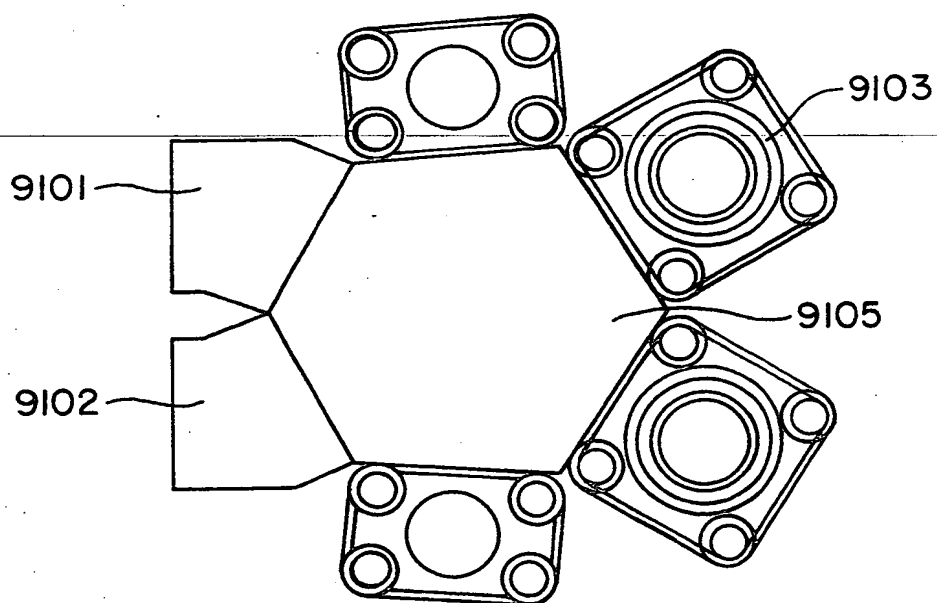
Fig. 88B Present invention





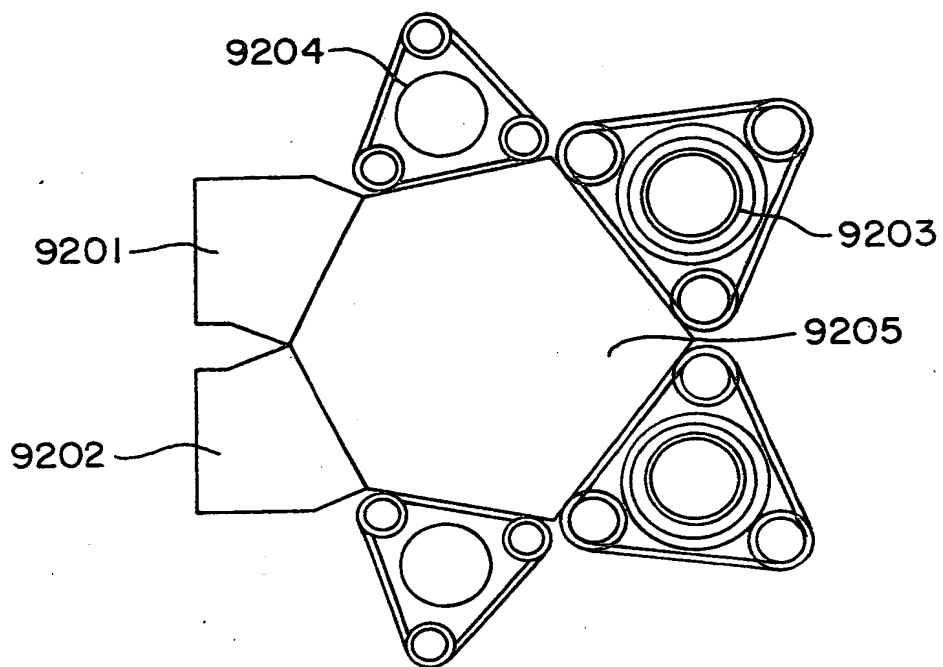
Cluster tool comprising assembly of rectangular process chamber (1)

Fig. 90



Cluster tool comprising assembly of rectangular process chamber (2)

Fig. 91



Cluster tool comprising assembly of triangular
process chamber

Fig. 92

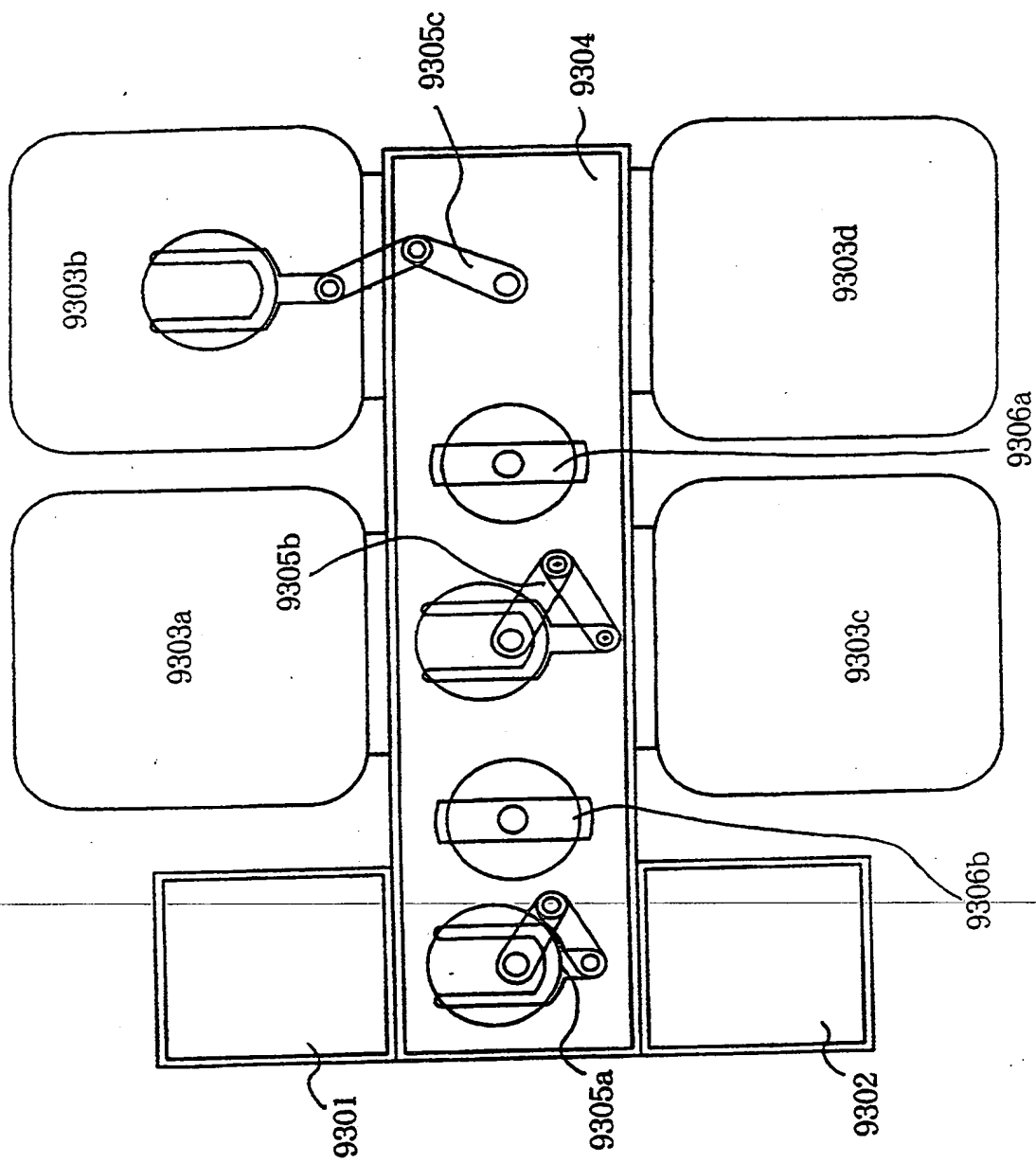


Fig. 93

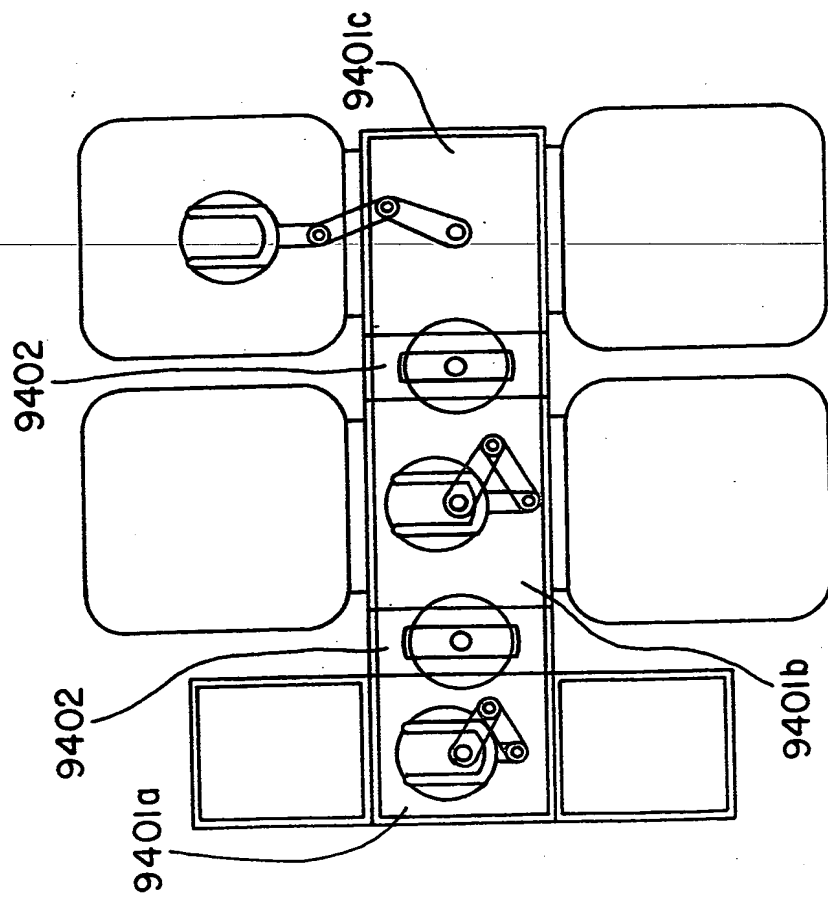


Fig. 94

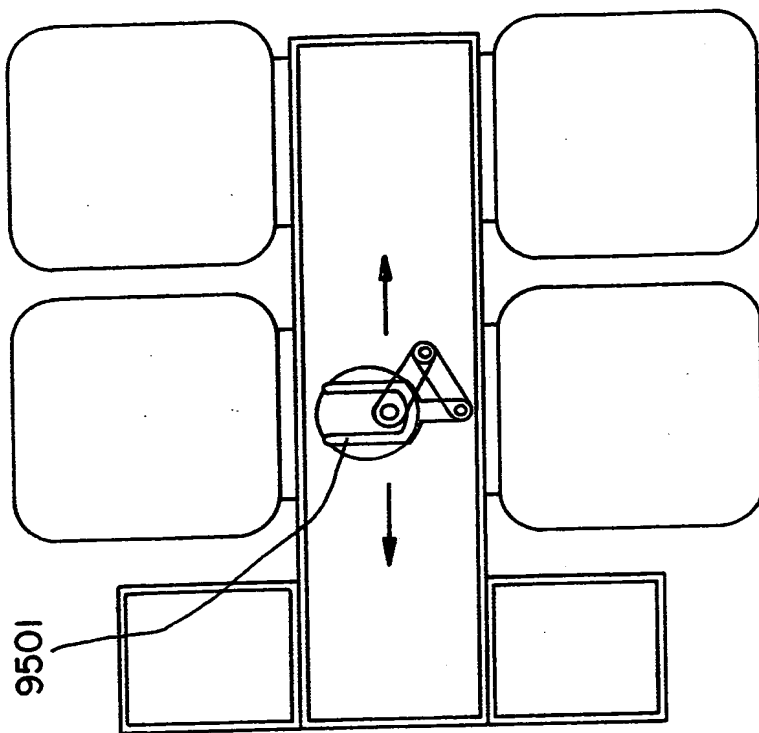


Fig. 95